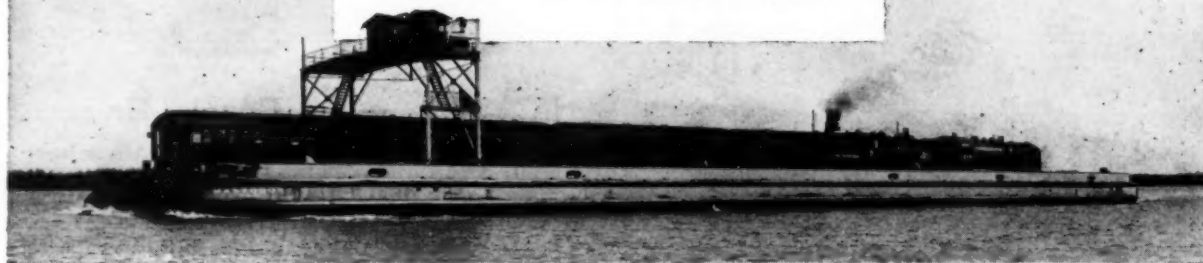


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Railway Age

Vol. 85. October 6, 1928 No. 14



"Sunset Limited" crossing the Mississippi on Southern Pacific Car Ferry.

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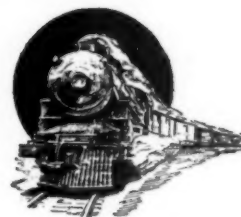
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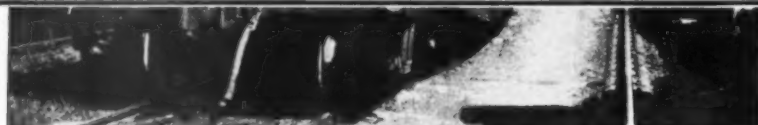
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October 6, 1928

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There Is No Royal Road to Railway Location

THE erection of a private telephone line for the use of resident engineers in the construction of a 168-mile railway focusses attention on the marked change that has taken place in railway construction engineering in the last fifteen years. Telephone service and an automobile at the disposal of each residency, electric light where current is available, and calculating machines and other modern office appliances for clerical work, have improved the lot of the construction engineer. Railway location, on the other hand, has gained less from modern industrial developments or scientific discoveries. The automobile can sometimes be used to advantage in reconnaissance, as can the airplane in rough and heavily wooded country, but in running preliminary and final locations there is no substitute for sole leather and calf muscles, nor, except in such areas as are covered by accurate and close-interval contour maps, is there any substitute for the trained eye of the locating engineer. With the passing of the period of extensive railway development, the demand for intuitive or acquired skill in the work of discovering the best location for a new railroad has been greatly reduced, but when such talent is needed, it is as indispensable as it ever was.

The Elusive Exception

A MOST potent source of expense in the handling of less-than-carload freight is the "exception". Shipments arrive without billing, billing arrives without shipments, there are "overs" and there are "shorts", the latter drawing on the railways' treasuries for considerable sums annually. Several roads have been highly successful in the last few years in reducing the number of exceptions per ton of freight handled, with a corresponding reduction in the freight claim bill. Among others, the Central of Georgia, the St. Louis-San Francisco, the Lehigh Valley, and the Union Pacific have made notable improvements in this regard, in many cases reducing the number of exceptions per thousand tons more than fifty per cent. They have found that the primary cause of exceptions, whether they are "overs", "shorts" or mistakes in billing, is carelessness. With this in mind, they have conducted campaigns of education among their freight station employees. They have made conscientious efforts to improve the methods and morale of such employees and, by contests of one sort or another, have supplied an incentive for better work. In some cases, the bonus system of freight handling has been productive of better exception records for the higher pay has attracted a better class of men, more in-

terested in their work, with the result that instances of carelessness have become less frequent. Constant effort on the part of the station supervisory forces and their superior officers is necessary to keep down carelessness, but the results obtained in the way of reduced claim payments and more satisfied shippers are distinctly worth while.

Train Control Measured by the Number of Locomotives

SEVERAL railroads are using advertising space in newspapers and magazines of national circulation as a means of directing attention to the greater safety of travel as a consequence of their installations of automatic train control. However, the extent to which automatic train control has been applied over the country as a whole is not generally known nor appreciated by the traveling public. Some of the facts with reference to the use of automatic signals, train control and other safety devices in service, and the records for safety of rail travel as compared with other means of transportation which are taking business from the railroads, might be used to advantage in good-will publicity by the railroads as a whole. As of September 1, there were 11,213 miles of road in the United States protected by automatic train-control and train-stop devices, which is a small per cent of the total lines operated. However, the locomotives equipped for operation in train-control territory totaled 8,496, or 19.68 per cent of the 43,154 locomotives reported to the commission as operating in road service in June, 1928. As the likelihood of a collision is gaged more by the number of trains than by the miles of road, the number of trains being shown more nearly by the number of locomotives, it should be a matter of interest to the public to know that the railroads have automatic train control protection for approximately 20 per cent of the locomotives in road service.

Aimless Discussion

SIX conventions of mechanical department supervisory officers' associations have been held in various cities in the past six weeks. In general, the attendance and interest have been fairly satisfactory, and the programs of committee reports, individual papers and addresses above the average. Viewing these conventions as a whole, and entirely aside from the question of the economy and desirability of consolidating convention dates, if not in some cases actually merging associations, two general constructive suggestions may be advanced. In the first place, contrary to the present usual procedure, definite action should, so far as pos-

sible, be taken on all committee reports, so that the consensus of opinion of the convention may be known and conclusions drawn from the wide experience of all the members. In the second place, the discussion should be given a definite trend and not permitted to wander aimlessly about at the whim of inexperienced speakers. An aggressive and competent presiding officer can guide it tactfully but firmly, and unless so guided it may become practically valueless. In this regard one of the meetings, namely that of the International Railway General Foremen's Association, deserves particular commendation because its president and presiding officer came to the convention with definite questions on each committee report carefully prepared in advance. He wielded the gavel impartially but firmly, and as soon as any member showed a tendency to depart from the subject, he was promptly called to order. Moreover, by directing the discussion along certain definite lines, the value of the discussion and of the meeting was materially enhanced. All associations will do well to eliminate so far as possible the aimless and profitless discussion which is all too prevalent at present.

Discounting Supply Bills

BY securing discounts for prompt payment on about 50 per cent of all the bills received for materials and supplies during the course of a year, an eastern road calculates that it is reducing its cost of supplies about \$75,000 a year. In every instance where invitations are issued to commercial firms for prices, and whenever negotiations are undertaken to arrange contracts under which supplies will be purchased, the road solicits an offer to allow a discount for the prompt payment of the bill and takes these offers into consideration in determining from whom it will buy material. That is the first step in the discounting work. The next is to attach a special notice to every bill received for material, notifying those who receive the bill of the terms of the discount offered, and urging prompt inspection of the material and the return of the bill for payment in time to secure the discount. In addition, the advance payment plan of meeting obligations for supplies is followed. All bills offering a discount are paid before the materials are received when concerns can be placed on an approved list in view of the volume and satisfactory character of the business previously done with them. The storekeeper has a record of every concern from which the road obtains its supplies, and this record shows whether a discount is offered and whether the invoices can be paid in advance of handling the material. If advance payment is authorized, the original bill for the material is approved for payment immediately when received by the stores department, and only the copy is forwarded to the consignee of the goods for certification.

The stores department also writes the checks for the bills to avoid delays in payment that might take place if the checks were not written until the bills were copied and other details handled in other departments. A form is used, the first sheet of which becomes negotiable when signed by the treasurer.

By following up closely all irregularities in the shipments of materials involved in discountable bills, as, for instance, the failure to fulfill specifications, shortages in quantities shipped, or delays in shipping, the road has found it possible to operate under its extensive discount payment plan with practically no trouble, and thus to save money at practically no expense.

What Kind of Power for Electric Traction?

THE Delaware, Lackawanna & Western has announced that 3000-volt, direct-current power will be used for propelling suburban trains on the 173 miles of track which is to be electrified in the northern New Jersey suburban zone. This, as the announcement states, will be the first application of 3,000 volts to multiple unit cars in regular railroad service.

The announcement of these cars as an innovation might give the impression that another diversification had been added to what is already a large variety of equipment. Actually it is an indication of the reverse. High-voltage direct current cars have been built and their practicability demonstrated, and the choice of the Lackawanna is another indication that important electric traction systems in the United States will in the future employ either 3,000 volts direct current or 11,000 volts alternating current.

All of the alternating current systems, including the Boston & Maine, Detroit & Ironton, Great Northern, New Haven, Norfolk & Western, Pennsylvania and the Virginian are now using 11,000 volts. In two instances 22,000 volts have been allowed for, but even in the case of the Virginian with its heavy trains and heavy grades, 22,000 volts has not been deemed necessary.

There is only one application of 3,000 volts direct current in this country, namely on the C. M. St. P. & P., but it can nevertheless be looked to as a form of power which will find extended application. It has been adopted in Mexico, Chile and Brazil. The Butte, Anaconda & Pacific employs 2,400 volts, but if the installation were made now, 3,000 volts would probably be used. The New York Central terminal district uses 600-volt direct current, but a decision has been made by the Cleveland Union Terminal Company to install 3,000 volts and this indicates that future New York Central installations now being contemplated will probably be designed for the same type of power. The Baltimore & Ohio electrification installed in 1895 uses 600 volts, but future extensions will probably be influenced by the Reading's Philadelphia installation. The Long Island suburban lines use 650 volts direct current. These lines will undoubtedly be extended, but will not exert appreciable influence on other roads because of their location. The Bay Ridge freight division of the Long Island uses 11,000 volts alternating current. The Illinois Central 1,500-volt installation is a departure, but it is not apt to exert much influence on the extended use of 3,000 volts since it does not involve heavy freight service. The decision to employ 3000 volts instead of 1500 on the Lackawanna was reached because the railroad contemplates electrifying the section over the Pocono mountains to Scranton, Pa., consisting essentially of heavy freight service. The Michigan Central uses 600 volts d. c., but the electrified section is so short that it will not affect future installations. The Pennsylvania's New York terminal uses 600 volts d. c., but provision is made for removing the 600-volt third rail and replacing it with an 11,000-volt a. c. overhead trolley.

It would appear therefore that 3,000 volts direct current or 11,000 volts alternating current will be favored for future electrification projects of any considerable magnitude. This leaves a pertinent question which the railroads should ask themselves. Is it desirable to establish a single kind of power supply at the trolley or are two forms of power satisfactory? If a single form is to be used, each new installation complicates the situa-

tion. If two are satisfactory, a decision to this effect will do much to dispel doubt and increase activity in projects now under consideration. A renewal of the old "Battle of the Systems" should be avoided; a smoke screen is not wanted. With all of the information on the subject which has now been compiled by various associations, and with a large number of capable traction engineers now in the employ of the railroads, it would appear that the time had arrived when this issue should be given sober consideration.

Passenger Officers Appoint an Important Committee

IF the passenger traffic officers carry into action the determination which so many of them expressed at their convention in Colorado Springs last week to deal actively and immediately with the problem of highway competition, then that convention may go down as the most important in the history of the American Association of Passenger Traffic Officers. There can be no doubt that those in attendance at the Colorado Springs meeting were thoroughly aroused by this problem and anxious to find a solution at the earliest possible date. This determination is reflected in the report of the meeting which is published elsewhere in this issue. Nor can anyone deny that the concern manifest is apropos. The problem is fully as serious as the passenger officers apparently believe it to be, and just as pressing for immediate solution.

The executives who determine railroad policies have a right to expect recommendations from the passenger officers as to how the railroads may meet the problem of declining passenger earnings. The president of the passenger officers' association has appointed a highway transportation committee and it has been suggested that this committee attend the next meeting of the Motor Transport Division of the American Railway Association in Detroit on October 24-26 to get the benefit of the experience of this division. This is an excellent suggestion and one which, no doubt, will be followed. But others beside this committee should attend the Detroit meeting; the responsible heads of the passenger departments of the various railroads should also be there.

The answer (or rather, probably, answers) to the passenger traffic problem can certainly be found just as readily in the next few months as in the next few years. The A. A. P. T. O. highway committee can secure the assistance of the Motor Transport Division, can canvass the member roads in a complete survey of the problem with suggested solutions, tabulate these solutions and make its recommendations within a relatively short time. The decline in passenger revenues without commensurate reduction in expenses is costing the railroads millions in net earnings each year. Delay in adjustment of policy to meet this situation is, therefore, expensive—more expensive than any cost in money or effort to secure an early report from this committee can be. Moreover, with the passing of each month the attainment of an easy solution becomes more remote.

There are a few roads in the country which may fairly claim to have solved this problem—as for instance, the railroad which in 1927 increased its *net* earnings from passenger service 80 per cent over those of 1921. The prescription which cures one road's complaint will not cure all, but a half-dozen well chosen formulas ought to care for most of them. It is time that these formulas were tabulated, analyzed, given official approval and certified to the railroads for immediate application.

Railway Employment and Wages

LABOR is, of course, the largest item in railway expenses. Average hourly railway wages have been increasing ever since 1923. Meantime passenger traffic and earnings have been declining, freight traffic has not increased as it did before the war and average revenue per ton per mile has declined, while taxes have increased. All these influences have tended to reduce railway net return. If railway managements had not found means of counteracting them the railroad industry would now be in a very bad condition financially. They have sought to counteract them by making investments of capital and improvements in operating methods which would effect economies by saving labor, fuel and materials. The largest saving has been effected by reducing the amount of labor employed and paid for. Statistics of the Interstate Commerce Commission regarding the employment and compensation of labor on the railways in the first six months of 1928 are now available. When they are compared with statistics for the first six months of each year back to and including 1923 they show that the railways have made remarkable progress in saving labor.

The average hourly wage of labor in the first six months of 1928 was the highest since 1921. The total amount of wages paid, however, was less than in the first half of any year since 1922. This was mainly due to a reduction in the total number of employees, but also partly due to a reduction in the average hours worked per employee. The average number of employees in the first half of this year was 1,658,861. This was 99,227 less than in 1927; 113,514 less than in 1926; 86,240 less than in 1925; 110,101 less than in 1924, and 183,364 less than in 1923.

The very large reduction since 1923 reflects various important changes in conditions that have occurred since then. During most of the first half of 1923 the railways had a car shortage. This was partly due to inadequacy of facilities and partly to the effect of the great shop employees' strike in the latter part of 1922. Equipment was in bad condition and the railways were employing an extraordinary number of men, many of them inexperienced, in repairing it. Since that time an investment of about \$4,000,000,000 has been made in enlarging and improving facilities. Equipment has been put in good condition. Not only has passenger business declined, but the increase of freight business has been much less than in proportion to the enlargement and improvement of facilities. In consequence, the railways have been able to reduce, and in the interest of the greatest economy in operation have steadily reduced, the number of employees.

The changes in railway employment that have occurred during the entire five-year period are striking. Comparing the first halves of 1923 and 1928 there is found an increase in the number of only one large class of employees. The number of men employed in the maintenance of way in the first half of this year was about 7,500 more than in the first half of 1923. This reflects a change in the policy of the railways as a result of which maintenance of way work on a large scale is begun earlier in the year now than formerly. It also reflects their policy within recent years of making relatively greater capital and maintenance expenditures upon track and other permanent structures than on equipment. The reduction in the first half of 1928, as compared with the first half of 1923, in their professional, clerical and general classes of employees was 11,197; in maintenance of equipment and stores em-

ployees 123,610, and in transportation employees of all classes, 56,721.

As already indicated, there has been a reduction not only in the number of employees but in the average number of hours worked by them. This has been especially true in train service. The constant increase in the average speed of freight trains has effected a large reduction in "punitive" overtime. The total number of hours for which all employees were paid in the first half of 1923 was 2,439,426,486, and in the first half of 1928, 2,100,899,795. Total wages paid in the first half of 1923 were \$1,500,597,260, and in the first half of 1928, \$1,404,238,682. But this actual reduction in the total payroll indicates very inadequately the saving effected by the reduction in labor paid for. The average hourly wage in the first half of 1923 was 61.5 cents, while in the first half of 1928 it was 66.8 cents. If the railways had paid for as much labor in the first half of 1928 as in the first half of 1923, and had paid the average hourly wage of 1928—namely, 66.8 cents—their total labor bill for the first half of this year would have been \$225,300,000 greater than it actually was. This figure is the true measure of the economy effected by the various measures adopted which have resulted in a reduction in the amount of labor paid for. The net operating income of the railways in the first one-half of 1928 was only about \$18,000,000 greater than in the first one-half of 1923. It would, of course, have been much less than in the first one-half of 1923, excepting for the economies effected.

An interesting question is as to what has become of the large number of men who have disappeared from railroad payrolls. Apparently they have been absorbed by other industries. Will the number of railway employees continue to decline? That will depend upon future changes in railway traffic. Undoubtedly railway managements, under constant pressure from competing means of transportation and for reductions of rates and advances in wages, will continue, as long as they can raise the necessary capital, to make improvements for the purpose of saving labor, fuel and materials. Possible improvements for this purpose are far from exhausted. The number of persons employed by the railways probably will continue to tend to decline unless railway traffic increases more than it has during the last five years.

The Courage to Tackle a Big Job

THE Edgewood cut-off of the Illinois Central, a 168-mile alternate main line which was placed in operation last May and is described on a following page, is an example of the fact that a railway is a constantly changing and steadily growing property. Like the Natron cut-off of the Southern Pacific in Oregon, which was completed last year, this new line affords a more economical route for the handling of a relatively large volume of traffic. While any line which includes a 63-mile tangent, which replaces an 0.8 grade line with one of 0.3 over two engine districts, and which involves the separation of grades with 146 highways, is of interest from an engineering standpoint, it is of still greater interest by reason of the economies that must be produced to justify such an expenditure.

In the case of the Edgewood line, the traffic over the old route had become so heavy and the demands for the more rapid movement of a highly perishable traffic so exacting, that added capacity was becoming a pressing necessity. This could, of course, be secured by providing additional tracks along the existing line. Surveys, showed, however, that a saving of twenty-two miles

could be effected and the grades and curvature greatly improved by the construction of an entirely new line around the congested area and this alternative was accepted.

In many respects this problem was typical of those facing most railway managements from time to time in the development of their properties to handle a growing traffic more economically. Relief of a more or less temporary character can usually be secured by minor improvements but there comes a time when a major improvement offers the only solution. To determine when that time arrives is no simple matter. Any improvement is, of course, subject to mathematical analysis in many respects but there are numerous other considerations which can be taken into account only through the exercise of a high degree of judgment. It is true that errors of judgment in such matters have brought disaster to more than one property. In general, however, the reverse has been true and the benefit secured has been reflected far beyond the physical limits of the improvement in question.

If the railways have erred more largely in one direction than the other, it has been in failing to appreciate the full value of such major improvements and to display the courage to follow the dictates of their better judgment. In a country that is growing as ours is, the demands for transportation over any considerable period must increase and these demands can be met most efficiently only by the constant modernization of the transportation machine in all of its highly diversified parts.

Limitation of Business Profits

UNITED STATES Senator Smith W. Brookhart of Iowa has announced that he will introduce a bill in Congress for limitation of the profits of all industries. The business world is shocked. The *Railway Age* is not shocked. This paper has become familiar with government limitation of profits through its application to the railroad industry. Furthermore we realize, although apparently few business men do, that the government's transportation policy already is, in effect, regulating profits in non-transportation industries, and that in large measure business men are responsible for this. Business men would be less shocked by proposals such as Senator Brookhart's if they better understood the true nature and effect of some government policies that are favored by themselves.

The government's policy of regulating the railways is now mainly and fundamentally one of limitation of profits. It says in court decisions and legislation that the railways can and will be restricted to a "fair return" upon the value of their properties. As the laws are administered the railways are not allowed to earn even this. Railway officers claim this is unfair to investors in railroads and must, in the long run, do harm by preventing the railways from paying reasonable dividends and raising adequate capital. But most business men show no concern about it. They know that railway service is now good and adequate. They "guess the railroads are doing pretty well."

If the policy of limitation of profits as applied to the railroads is fair and harmless, why would it be unfair or harmful if applied to other large scale industries? The answer usually made is that the railways render a "public service" and therefore are legally subject to a special form of regulation. But law and economics are different. Economically, there are now no differences between railroads and other large concerns that justify different government policies regard-

ing their profits. With the competition of other means of transportation to which they are now exposed, and the competition between themselves that prevails, the railways are no longer a quasi-monopoly, as present government policy assumes, but are engaged in as highly competitive a business as any other in this country. There are numerous large industrial corporations which are more powerful in their fields than any railroad is in the transportation field.

"Hath Not a Jew Eyes?"

With regard to the economic aspects of the matter, the railways, in addressing other industries, may well paraphrase the words of Shylock. "Hath not a Jew eyes?", said Shylock. "Hath not a Jew hands, organs, dimensions, senses, affections, passions?" Does not a railroad have competition to meet, interest to pay, stockholders who want dividends, properties to enlarge and improve, economies to effect, customers to satisfy? Does it not need to raise capital to enable it to do these things, just as a manufacturing concern does. Can it get capital at a lower rate because it is engaged in a public service? Would not large distributions of profits by railroads contribute as much to the general prosperity as large distributions of profits by other large concerns?

It may be said that limitation of the profits of other industries would be unconstitutional. But the constitution can be changed. It may be said it would be impracticable. It would be as practicable as limitation of the profits of railroads. It may be said it would introduce too much "government in business." Why so much fear of government in other kinds of business and so little fear of government in the transportation business? It may be said it would hinder the progress of other industries. It would not hinder their progress any more than it hinders the progress of the railroads. Any business man who favors the present government policy of limitation of railway profits cannot consistently advance a single valid argument against similar limitation of the profits of every other large scale industry. Every radical and socialist knows this. Only business men apparently do not know it.

Besides, as we said above, the government's policy of regulating railroads already is developing into a policy of regulating profits in other industries. This was the very purpose of the authors of the Hoch-Smith resolution. That resolution directs the Interstate Commerce Commission, in adjusting freight rates, to consider the conditions in the various industries, which means that industries that are depressed are to be given lower freight rates, and those that are prosperous are to be made to pay higher freight rates to compensate the railways for the reductions given those that are depressed. This, of course, is regulation of freight rates for the purpose of regulating profits in the various industries.

Indirect Regulation of Profits

The government's transportation policy is indirectly regulating industrial profits in other ways. It is allowing motor coaches and trucks to be operated on highways as common carriers while paying less for the use of the highways than it costs the public to have them used. It is not regulating the service and rates of common carriers by highway as it regulates those of the railways. In consequence of this governmental policy common carriers by highway are taking passenger and freight business from the railways that they otherwise could not take. The government is letting boats use

waterways constructed or improved by it at the cost of the taxpayers, while refraining from regulating their rates. It is operating and extending the barge service upon the Mississippi river system largely at the expense of the taxpayers. Thus subsidized by government, carriers by waterway also are taking business from the railways and business men hope they will take more.

Now, this subsidized and unregulated competition does not regulate the net earnings of the railroads alone. Partly because of the diversion of traffic from them the railways are buying much less equipment than formerly. In consequence, the railway equipment manufacturing industry, after a poor year in 1927, had a decline of about 30 per cent in its net profits in the first six months of this year. Every measure adopted by the government which results in the diversion of business from the railways indirectly results in reductions of the profits of all concerns that are dependent principally upon the railways for a market. Meantime, of course, it tends to increase the profits of those which, directly or indirectly, provide other means of transportation.

Senator Brookhart and Business Men

Thus Senator Brookhart might well say to most business men who call him a radical or socialist for advocating limitation of the profits of all industries, that if he is a radical he at least knows it, while many of them are radicals without knowing it. He desires—or believes he desires—to have all kinds of business treated alike. Apparently he does not see any reason why, if the government should directly limit the profits of the railways, and indirectly regulate both their profits and those of concerns that depend upon them for a market, it should not also, directly and indirectly, regulate and limit the profits of other industries. Most business men, on the other hand, see no injustice or harm in the government's transportation policy, but almost have cataleptic fits when it is proposed to apply a similar policy to the manufacturing, mining, mercantile and financial pursuits in which they happen to be engaged. They support the government's transportation policy because they believe it does or will increase their own profits, regardless of the effects it may have on the profits of anybody else.

Economics as well as politics may make strange bed-fellows. The *Railway Age* always has opposed the railroad policies favored by Senator Brookhart. We are in agreement with him, however, to the extent of believing that there is as much economic justification for government limitation of the profits of other industries as for the kind of government policy being followed regarding transportation. It is economically unsound, unfair and unrighteous for the government directly to discriminate between different kinds of industries as it is now doing, with the effect of preventing some, including the railroads and the railway equipment manufacturing industry, from earning anywhere near even the so-called "fair return", and of helping others to earn enormous profits. If the profits of the railways should be so regulated that they cannot earn even the so-called "fair return of 5¾ per cent," there can be no justification in economics or morals for letting other large industries earn a great deal more. When business men who denounce socialistic policies are such socialists themselves as to acquiesce in, or actually support, such government transportation policies as they do, men like Senator Brookhart may well suggest to them that those who live in glass houses should not throw stones.

Missouri Pacific Finds Extended Engine Runs Profitable

Savings in operating and mechanical factors follow installation of a system plan



THE Missouri Pacific is effecting a saving of \$70,000 a month, or \$840,000 a year, by extending its freight and passenger locomotive runs. This includes only such savings as are definitely determinable, including the elimination of tie-ups at intermediate terminals, reductions in enginehouse expense, savings in fuel, and reductions in hostlers, helpers, locomotive and car forces. It also includes the reduction in interest on investment, brought about by the saving of 67 engines.

Road Was Pioneer in Long Runs

The Missouri Pacific was one of the pioneers in long engine runs on passenger trains. Its long freight runs were successfully inaugurated and maintained following the installation of the "maintrucker" system, which was described in the *Railway Age* of April 7, 1928, page 792. Manifestly, running freight engines through can only be accomplished satisfactorily where freight trains

are run for considerable distances without heavy switching in terminals or great detention time in yards. The Missouri Pacific has found, through actual experience, that by "maintracking" freight trains and establishing long freight engine runs in conjunction, a most efficient operation may be worked out. Before long freight runs were inaugurated, a complete survey was made as to the most efficient way of matching them up with the "maintracking" plan, and the results of this study, as applied to actual operations, have been satisfactory.

The Freight Runs

An excellent comparison of results obtained is possible, since the gross ton miles are comparable before and after the system was installed. In June, 1928, for example, the gross ton miles aggregated 2,096,605,249. This approximates closely the figure of 2,097,201,319 gross ton miles for June, 1926, prior to the installation of the system. Despite an almost equal amount of

Table 1.—Extended Freight Runs

July 1928			July 1926			
Between	Miles	No. of Engs.	Between	Miles	No. of Engs.	Engines Saved
Dupo and Little Rock	375	8	Dupo and Gale	112	4	
			Gale and Hoxie	145	4	
			Hoxie and Little Rock	118	4	4
Dupo and Paragould	225	6	Dupo and Gale	112	4	
Paragould and McGehee	188	5	Gale and Paragould	113	4	2
McGehee and Alexandria	191	7	Paragould and Lexa	105	4	
Little Rock and Osawatomie	452	37	Lexa and McGehee	83	4	3
			McGehee and Monroe	94	4	
Osawatomie and Muskogee	238	3	Monroe and Alexandria	97	6	3
Osawatomie and Hoisington	224	6	Little Rock and Van Buren	152	47	10
Hoisington and Pueblo	336	6	Van Buren and Coffeyville	166		
Wichita and St. Louis	485	4	Coffeyville and Osawatomie	134	2	1
			Osawatomie and Coffeyville	134	2	
Omaha and Kansas City	205	6	Coffeyville and Muskogee	104	4	
Nevada and Cotter	192	3	Osawatomie and Council Grove	90	4	
St. Louis and Kansas City	287	24	Council Grove and Hoisington	134	4	
			Hoisington and Horace	172	4	2
			Horace and Pueblo	164	2	
			St. Louis and Sedalia	188	2	
			Sedalia and Ft. Scott	137	2	
			Ft. Scott and Wichita	160	2	2
			Omaha and Falls City	104	4	
			Falls City and Kansas City	101	4	2
			Nevada and Crane	88	2	
			Crane and Cotter	104	2	1
			St. Louis and Jefferson City	125	36	12
			Jefferson City and Kansas City	162		
Total		115			159	44

traffic, as indicated by the gross ton miles, the average number of freight locomotives in service during June, 1928, was 115, as compared with 159 during June, 1926, a reduction of 44 or 27.6 per cent.

In July, 1926, prior to the installation of the present system, the longest freight run on the Missouri Pacific was between St. Louis, Mo., and Sedalia, 188 miles, and the shortest run in through freight service was between Lexa, Ark., and McGehee, 83 miles. The average of all main-line freight runs was 126.5.

Longest Run Is 485 Miles

As engines are at present operated, the longest run is 485 miles, between St. Louis and Wichita, Kan., or 297 miles longer than the previous record. Other long runs are between Little Rock, Ark., and Osawatomie, Kan., 452 miles, and between Little Rock and Dupo, Ill., 375 miles. The shortest run in through freight service is now 191 miles, between McGehee, Ark., and Alexandria, La. The average of all main-line freight runs is now 284 miles, or an increased efficiency of locomotives on a mileage basis of 124.5 per cent.

As indicative of what has been done in this regard, through freight runs from Dupo, Ill., to Alexandria, La., 604 miles, are now handled by three engines as compared with six previously required. Through runs from Little Rock, Ark., to Pueblo, Colo., 1,102 miles, are now handled by three engines, as compared with seven previously required. In three cases, three engine districts have been consolidated into one, and in nine other cases, two engine districts are now operated as one. Details as to this re-assignment of engine districts, together with the saving in engines effected, are given in Table 1.

Analysis of Freight Run Savings

The following analysis of the detailed savings made in freight runs is taken from the figures for 1927, as compared with 1925. The figures for this year, when available, will make an even better showing, based on results so far attained.

<i>St. Louis and Kansas City</i>	
Enginehouse expense, Jefferson City	\$1,347
Mechanical inspection Jefferson City	365
Mechanical force engaged in repairs	5,499
Firing up engines, 1½ tons per engine, 235 engines per month	880
Save 6 engines, 6 per cent on investment	1,950
	\$10,041
<i>Kansas City and Joplin</i>	
Save 2 engine handlings per day at Nevada	\$ 267
Saving in fuel firing up, 1½ tons per engine per day	279
Mechanical inspection Nevada	45

Save 1 engine, 6 per cent interest on investment	325	916
<i>Nevada and Cotter</i>		
Save 2 engine handlings per day	\$ 233	
Saving in fuel firing up 2 engines	279	
Mechanical inspection	45	
Save 1 engine, 6 per cent interest on investment	325	882
<i>St. Louis and Ft. Scott</i>		
Save 2 engine handlings per day, Sedalia	\$ 300	
Saving in fuel firing up, 3 tons per day	270	
Save 2 engines, 6 per cent interest on investment	650	1,220
<i>Dupo and Paragould-Poplar Bluff-Little Rock</i>		
Discontinue Gale Terminal, save	\$2,790	
Save engine handling, Trains 67-62-65 and 64, Poplar Bluff	480	
Saving in fuel firing up 4 engines per day	540	
Save by running engines through Dupo to Little Rock on these trains 2 engines, 6 per cent interest on investment	650	
Abolishing Hoxie Terminal, save	2,421	6,881
<i>McGehee and Paragould</i>		
Discontinuing Lexa Terminal, Save	\$8,975	
Save fuel firing up engines	630	
Save 3 engines, 6 per cent interest on investment	975	10,580
<i>Little Rock and Monroe</i>		
2 red ball trains each way per day, save 4 engine handlings at McGehee	\$ 420	
Save fuel firing up 4 engines per day	540	
Save 2 engines, 6 per cent interest on investment	650	1,610
Total saving in Freight Service per Month		\$32,130

Passenger Runs

With comparable passenger train mileage, 46 passenger engines are being used at present, as compared with 69 in 1925, before the present system had reached its ultimate form. This represents a saving of 23 passenger engines, or 33.3 per cent.

The longest main-line passenger run previously operated was between Coffeyville, Kan., and Little Rock, Ark., 327 miles, while another run, between Little Rock, Ark., and Hot Springs, was only 54 miles. The average main-line passenger run was 169.8 miles.

Under present operation the longest passenger run is from Little Rock to New Orleans, 598 miles, while 5 other runs are greater than 450 miles. The average main-line passenger run is now 413 miles, an increase of 243.2 miles, or 143 per cent. The details of the old and the new runs are given in Table 2.

Analysis of Passenger Run Savings

The following analysis of the savings effected by longer passenger engine runs is based upon 1927 figures:

<i>St. Louis-Texarkana and St. Louis-Palestine, Trains 1-21 and 2-22. (Oil burners)</i>		Saving Per Mo.
Save 4 engine handlings daily at Poplar Bluff, 4 at Little Rock, 2 at Texarkana, total 10 engine handlings per day	\$1,847	
Saving in fuel firing up, 243 gal. per engine, 3 cents per gal.	2,187	
Mechanical inspection at Poplar Bluff, Little Rock and Texarkana	453	
Save 3 engines, 6 per cent interest on investment	900	\$5,387

Table 2.—Extended Passenger Runs

July 1928			July 1926			
Between	No. of		Between	Miles	No. of Engs.	Engines Saved
St. Louis and Texarkana	495	10	St. Louis and Poplar Bluff	163	3	
Little Rock and Palestine	316		Poplar Bluff and Little Rock	179	3	
			Little Rock and Texarkana	145	3	
			Texarkana and Longview Jct.	90	2	
Poplar Bluff and Texarkana	469	6	Longview Jct. and Palestine	81	3	4
Poplar Bluff-Hot Springs and return Little Rock	287	2	Poplar Bluff and Little Rock	179	9	3
Little Rock and New Orleans	598	9	Little Rock and Texarkana	145	2	
			Poplar Bluff and Little Rock	179	1	
Osawatomie and Little Rock	465	6	Little Rock and Hot Springs	54	1	2
St. Louis and Wichita	485	2	Hot Springs and Little Rock	54	1	
St. Louis and Omaha	481	3	Little Rock and Alexandria	292	8	
Sedalia and Omaha	293	2	Alexandria and New Orleans	208	3	
Joplin and Omaha	365	4	Alexandria and Lake Charles	98	2	4
Joplin and Newport	289	2	Osawatomie and Coffeyville	138	4	
			Coffeyville and Little Rock	327	4	2
			St. Louis and Sedalia	188	3	
			Sedalia and Wichita	297	2	3
			Sedalia and Kansas City	282	2	
			St. Louis and Kansas City	199	2	1
			Kansas City and Omaha	94	1	
			Sedalia and Kansas City	199	2	1
			Joplin and Kansas City	166	3	
			Kansas City and Omaha	199	2	1
			Joplin and Cotter	164	2	
			Cotter and Newport	125	2	2
Total	46				69	23

<i>Little Rock and New Orleans, Trains 115-116</i>			
<i>Little Rock and Lake Charles, Trains 101-102</i>			
Save 8 engine handlings per day	\$ 960		
Saving in fuel firing up	1,080		
Save 3 engines, 6 per cent interest on investment	900	2,940	
<i>Poplar Bluff and Texarkana, Trains 3-4, 7-8, and 25-26</i>			
Save 3 engine handlings per day	\$ 563		
Saving in fuel firing up	438		
Mechanical inspection, Little Rock, 3 engines per day	136		
Outside hostlers and helpers handling engines between enginehouse and depot, Little Rock	180		
Save 3 engines, 6 per cent interest on investment	900	2,217	
<i>Oswatomic-Little Rock, Trains 115-116-117 and 118, Coffeyville-Little Rock, Trains 103-104</i>			
Save engine handling Coffeyville and Van Buren	\$1,112		
Saving in fuel firing up	1,550		
Mechanical inspection	159		
Car inspectors' hours	61		
Outside hostlers and helpers	243		
Save 6 engines, 6 per cent interest on investment	1,500	4,625	
<i>Kansas City-Hoisington, Trains 11 and 12</i>			
Save 2 engine handlings per day	240		
Saving in fuel firing up	292		
Save 1 engine, 6 per cent interest on investment	300	832	
<i>Oswatomic-Pueblo, Trains 13 and 14</i>			
Save 4 engine handlings per day	\$ 480		
Saving in fuel firing up	630		
Save 2 engines, 6 per cent interest on investment	600	1,710	
<i>St. Louis-Omaha, Trains 9-103 and 110-10 (Oil Burners)</i>			
Save 2 engine handlings per day, Kansas City	\$ 471		
Saving in fuel firing up	297		
Mechanical inspection, Kansas City	48		
Saving oil compared to coal	162		
Save 2 engines, 6 per cent interest on investment	600	1,584	
<i>Joplin and Omaha</i>			
Run two trains through each way, save 4 engine handlings per day at Kansas City	\$ 954		
Saving in fuel firing up	594		
Mechanical inspection	96		
Save 3 engines, 6 per cent interest on investment	750	2,394	
<i>Sedalia and Wichita, Trains 19 and 20</i>			
Save 2 engine handlings per day, Ft. Scott	\$ 354		
Saving in fuel firing up	275		
Mechanical inspection	45		
Save 2 engines, 6 per cent interest on investment	500	1,174	
Total Saving in Passenger Service	\$22,863		

Savings in Enginehouse Expense and Fuel Costs

The effect of extended engine runs in reducing fuel consumption is apparent by reference to the figures in this regard. In 1926, the first year in which the complete long-run operation was effective, fuel consumption was 145,498 tons, or \$426,133 less than in 1925, an average reduction of 12,125 tons, or \$35,511 per month. In 1927, despite flood conditions, which caused increases to be shown over 1926 during three months, this reduction continued. The total reduction for 1927, as compared with 1926, was 54,544 tons, or \$157,026, an average reduction of 4,545 tons or \$13,086 per month.

As a result of the extended engine runs, it has been possible to close five engine terminals, at Gale, Ill.; Crane, Mo.; Greenleaf, Kan.; Hoxie, Ark.; and Lexa. It was also possible to reduce forces materially at several other points, notably at Jefferson City, Mo.; Van Buren, Ark.; Falls City, Neb.; Coffeyville, Kan.; Council Grove, Horace, Conway Springs and Fort Scott. During the first five months of 1928, enginehouse expenses showed a reduction of \$222,731, compared with the corresponding five months of 1925, and \$155,543 as compared with the first five months of 1926.

In addition to the items of saving enumerated above, there are several others less definite resulting from reducing the use of intermediate terminals, or abandoning them, such as reducing property investment and the cost of maintaining buildings, fixtures and tracks, less taxes, and reduction in miscellaneous expenditures by concentration of work at important terminals where repairs and the dispatching of locomotives can be performed more economically than at sub-division points.

The saving definitely attributable to extended engine runs because of eliminating tie-ups at intermediate terminals, reduction in enginehouse expense, saving in fuel, reduction in locomotive and car forces and hostlers and helpers also including the interest on investment by requiring 67 fewer engines, now approximates \$70,000 per month, or \$840,000 per year.

I. C. C. Bureaus Merged

WASHINGTON, D. C.

THE Bureau of Signals and Train Control Devices of the Interstate Commerce Commission was discontinued as a bureau on October 1 and merged with the Bureau of Safety as the Section of Signals and Train Control. Announcement of the change in organization was made by the commission on September 28 in a statement saying it was to be made pursuant to action by the full commission in conference and that correspondence and reports relating to matters previously handled by the Bureau of Signals and Train Control Devices should be addressed in future to the director of the Bureau of Safety, Wilfred P. Borland. Such matters were formerly handled by a section of the Bureau of Safety but a separate bureau for signals and train control was organized in July, 1924, with E. H. De Groot, Jr., as director. Mr. De Groot has now been appointed special assistant director of the commission's Bureau of Service, of which he was formerly assistant director.

It is understood that the change in organization has been adopted in the interest of economy and efficiency in the conduct of matters relating to signals and train control and that it will result in some reduction in the force of the bureau. All but one of the installations of automatic train control or train stop devices required by the two orders issued by the commission in 1922 and 1924 have now been completed and only ten of the required installations which have been completed remain to be inspected for approval. These are the installations on the Chesapeake & Ohio; Chicago, Indianapolis & Louisville; and Pennsylvania, under the first order, and those on the Central of New Jersey; the Chicago & Northwestern; the Chicago, Indianapolis & Louisville; the Chicago, Milwaukee, St. Paul & Pacific; the Delaware & Hudson; the Delaware, Lackawanna & Western, and the Erie, under the second order. The New York, New Haven & Hartford has been granted an extension of time for the completion of changes in its installation.

Last year the commission had under consideration the issuance of an order or orders requiring additional installations of train control but instead it ordered an investigation of the adequacy of existing installations of block signals and automatic train control or train stop devices with a view to the issuance of orders if found warranted. The report of that investigation is now under consideration by the commission but if it should result in an order the installations made under it would not reach a stage requiring inspection for some time.



On the Pennsylvania



Coleman Cut, from Which 1,300,000 cu. yd. of Material Was Excavated

Building of Edgewood Cut-Off Involves Heavy Work*

*Sixty-three mile tangent, sixteen million yards of grading
and three tunnels are features of Illinois
Central's new line*

By A. F. Blaess
Chief Engineer, Illinois Central

THE opening to traffic of the new 168-mile line of the Illinois Central from Edgewood, Ill., to Fulton, Ky., on May 7, 1928, marked an engineering achievement worthy of note and a definite step forward in the improvement of that railroad's service between the north and the south. While part of the territory traversed by the new line is Illinois prairie, much of it is heavy rolling country and a portion of the line occupies the foothills of the Illinois "Ozarks," so that the work of location and construction offered problems that tested the skill of the engineers. What construction involved is indicated clearly by the fact that it embraced the driving of three tunnels totaling 10,385 ft. in length, the building of 12,657 ft. of trestle, the excavation of 16,111,000 cu. yd. of material, including 4,680,000 cu. yd. of rock, the laying of 6,366 tons of pipe and the placing of 12,035 cu. yd. of masonry.

Why the Line Was Built

Like most of the railway systems of the United States, the Illinois Central was built up by the purchase or consolidation of various railroads. That portion of the system north of the Ohio river, between Cairo, Ill., and Chicago, was constructed in the early fifties. The

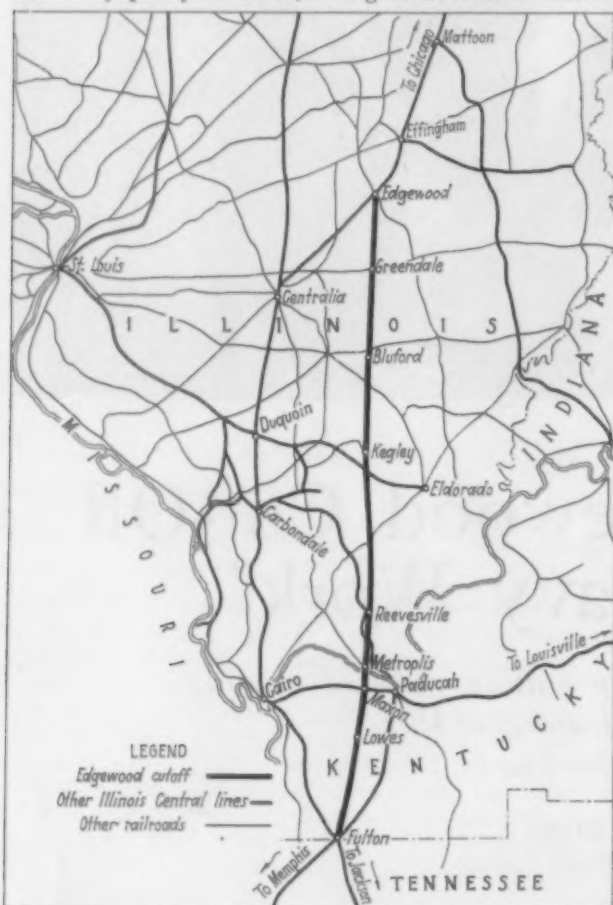
topography of the country it serves is such that it was comparatively inexpensive to get a good alinement and easy grades between Chicago and Centralia, but that part of the line from Carbondale to Cairo traverses rough, hilly country and it was constructed and has been operated since with maximum gradients of 0.8 per cent against northbound and 0.7 per cent against southbound traffic, and with maximum curves of 5 deg.

About 1882 the Illinois Central obtained control of lines south of the Ohio river, thus creating a railroad continuous from Chicago to New Orleans. Cars were ferried across the Ohio river until the Cairo bridge, a single-track structure, was completed in 1889. Upon the completion of this bridge, the Mobile & Ohio acquired rights over it which that road continues to use to this day.

In 1896, following a large increase in traffic and after the purchase of the Chesapeake & Ohio Southwestern, extending from Memphis, Tenn., to Louisville, Ky., and crossing the original main line at Fulton, Ky., the Illinois Central commenced the construction of a second main track between Fulton and Chicago. In carrying out this work, the grades between Fulton and the south bank of the Ohio river were reduced from 1.1 per cent to 0.8 per cent, but no revision of grades was made between Cairo and Carbondale, the maximum gradient

* Abstracted from a paper presented before the Western Society of Engineers, Chicago, on October 1.

remaining 0.8 per cent. Since the completion of second track in 1902, the tonnage passing over the single-track bridge at Cairo has increased over 200 per cent, reaching a maximum of 84 trains in 24 hours during the World War. The bridge thus imposed an obstruction to traffic which was overcome in part by the purchase of larger power after the structure had been strengthened to carry it. These measures, however, were only partly effective, owing to adverse conditions



How the Cut-off Shortens the Distance Between Edgewood and Fulton

for a distance of 40 miles north of Mounds yard, which is located 10 miles north of Cairo. In this 40 miles, the line climbs over a hill with its summit at Anna, necessitating the employment of helper service for northbound freight trains for the 28 miles from Mounds to Anna, and for southbound trains for the 12 miles from Makanda to Anna.

The pusher service naturally increased the train density and during peak business the two tracks in this territory were inadequate to handle the business properly. Likewise, the traffic moving over the single-track line between Fulton, Ky., and Paducah, with grades in excess of one per cent, was such as to point to the need of definite improvements. There was also a need for improvements on certain branches in the Southern Illinois coal fields to effect more economical operation, some of which would not be necessary if an alternate main line were constructed through the coal fields.

Other Factors Influence Decision

This was the situation that confronted the management of the railroad before a decision was reached to construct the Edgewood line. The problem which con-

fronted it was whether it would be better to build an entirely new line or to reduce grades to 0.3 per cent on the existing line between Edgewood and Fulton, involving in many cases a relocation of the railroad, the construction of a third track for part of the distance, and also the reconstruction of the bridge at Cairo as a double-track structure.

The decision was influenced by the fact that in 1917 the Chicago, Burlington & Quincy, through a subsidiary, the Paducah & Illinois Railroad, constructed a double-track bridge over the Ohio river at Metropolis, Ill. This bridge is only a short distance downstream from Brookport, where the Illinois Central had for many years maintained a ferry for handling trains operated between Carbondale and Paducah. The bridge was not used extensively, and during the World War the Illinois Central abandoned its ferry service and began the use of this bridge for these trains, subsequently acquiring a one-third interest in the structure, which is located on an almost due north and south line between Edgewood and Fulton.

Surveys were made and detailed estimates prepared for the improvement of the old line and the construction of a new line through Metropolis, and careful analyses were made of the volume of business that could be diverted to this new route. As a result of this analysis and investigation, a decision was finally reached to build the new line, 168 miles long, between Edgewood and Fulton.

Primary among the reasons for adopting the new route were a saving of 22 miles in distance and the ability to secure a crossing of the Ohio river that would be comparatively free from the possibility of having service interrupted during extreme flood periods. Investigation showed that the volume of business, present and prospective, was such as to justify the construction of a line with 0.3 per cent ruling grades and a maximum curvature of 1 deg. and 30 min.

Nature of Territory Traversed

The northerly part of the territory traversed by the new line in Illinois presented few obstacles to the location of a line of such characteristics, and its outstanding feature is a 63-mile tangent southward from Edgewood. The southerly part, however, presented a very different problem. The topography is much rougher, comprising, in fact, the so-called "Ozark Mountain Region" of Southern Illinois, and in order to hold to the 0.3 per cent grade and 1-deg. 30-min. curves in the "Ozarks," it was necessary to construct three tunnels 800 ft., 6,985 ft., and 2,600 ft. in length, respectively. Added difficulty and expense were introduced by the separation of grades with 5 railroads and 146 public highway crossings throughout the length of the line.

Construction was started in the early part of 1925, the line being divided into eight sections in placing the work under contract. The sections and contractors were as follows: Section 1, 31.2 miles, Shugart & Blythe; Section 2, 31 miles, John Marsch; Section 3, 6.0 miles, M. L. Windham; Section 4, 27.5 miles, States Corporation; Section 5, 19.5 miles, A Guthrie & Co.; Section 6, 10.2 miles, Flick Construction Company; Section 7, 21.6 miles, Dominion Construction Company; and Section 8, 21.1 miles, H. W. Nelson Construction Company.

The Construction Organization

For purposes of administration, the line was divided into two divisions—126.3 miles in Illinois and 42.7 miles in Kentucky, with an assistant engineer, reporting direct to the engineer of construction, in charge of each

division. Each division was divided into residences about 10 miles in length. A temporary telephone line built along the right of way and connecting the resident engineers' camps with the division engineers' offices at Marion, Ill., and Fulton, Ky., proved very useful in handling the work. Extensive use was made of this telephone line also while track laying and surfacing were in progress, the track inspector carrying a portable telephone set on his motor car.

The actual construction work was carried on simultaneously at all points by the usual methods, and during the peak of construction, the equipment in operation included 42 steam and gasoline shovels with dippers ranging from $\frac{3}{4}$ to 4 cu. yd. capacity, 1,231 narrow and standard-gage dump cars, 110 locomotives, 14 elevating grading machines, 220 wagons and outfits with 950 head of livestock, 62 trucks and tractors, 12 hoisting derricks and pile drivers, and 61 pumps, together with 20 air compressors and 8 Diesel engines with a full complement of drills and other machines needed on the work.

The Grading Was Heavy

Embankments were constructed with a roadbed width of 20 ft. and side slopes of $1\frac{1}{2}$ to 1, with a shrinkage allowance for both height and width that varied with the nature of the material. Cuts in earth were given a roadbed width of 32 ft. and side slopes of 1 to 1, while rock cuts were made 26 ft. wide at the base with slopes of not less than $\frac{3}{4}$ to 1. In rock cuts with an earth overburden, slope stakes were set on the basis of a full earth section, and when rock was encountered the section was changed to that specified for rock, thus leaving a shoulder or berm at the foot of the earth slopes.

Of the total of 16 million cubic yards of grading only about two million cubic yards was handled by teams, and practically all of this was in the northern 60 miles of the line where the grading was more moderate. The heaviest work, primarily in earth, was in the Kentucky section. The Coleman cut, a short distance south of Maxon, was the largest, 600,000 cu. yd. being excavated to form the normal roadway section, in addition to which 700,000 cu. yd. was removed for use in grading the site of the new mechanical shops at Paducah. Immediately south of this cut is a fill, two miles long, with a maximum height of 40 ft., which re-

quired 1,150,000 cu. yd. of filling, taken, in part from the Coleman cut and the remainder from a cut to the south, which has a length of 5,000 ft. and a maximum depth of 60 ft., and required 557,000 cu. yd. of excavation. Another cut on this part of the line called for 600,000 cu. yd. of excavation, while an embankment nearly 13,500 ft. long required 700,000 cu. yd. of fill. The largest fill on the line in Illinois totaled about 500,000 cu. yd. The heaviest rock excavation was en-



There Are Many Long, High Embankments

countered in the cuts at the portals of the tunnels, which are referred to in following columns.

Difficult Tunnel Work

Section 5, which includes the three tunnels, required 921,000 cu. yd. of common excavation and 2,300,000 cu. yd. of rock excavation and is about 19.5 miles long. Tunnel No. 1 is 800 ft. long. The north portal cut is 73



Rugged Country Was Encountered in the Illinois "Ozarks"—View South of Tunnel No. 2

ft. high and 250 ft. long, and the south portal cut, 74 ft. high and 400 ft. long. The tunnel was excavated by station men, using the top-heading method. The material, consisting of sandstone and shale, appeared to be self supporting when first excavated, and did not need immediate lining, but after exposure for several months a large amount of spalling was noted and a permanent reinforced concrete lining with a minimum thickness of 12 in. was installed.

Tunnel No. 2 which is 6,985 ft. long, presented an



On the 63-Mile Tangent

entirely different problem. The portal cuts are exceptionally deep and long, approximately 85 ft. deep and 4,200 ft. long on the north end, and 72 ft. deep and 4,000 ft. long on the south end, and necessitated the removal of 600,000 cu. yd. of rock and earth. Owing to the length of time that would be required to excavate the portal cuts, it was decided not to delay work on the tunnel until the cuts were opened up, but to proceed at once from a shaft 7 ft. by 14 ft. in section and 200 ft. deep near the center of the tunnel. The center heading method of construction was followed and 10-ft. by 10-ft. headings were driven simultaneously in both directions from the shaft, using air drills and air-operated muckers with electric locomotives hauling the excavated material to the shaft where it was hoisted to the surface and wasted.

Contractor's Plant

The contractor's plant consisted of six Diesel engines, three of 200 hp. and three of 100 hp., connected to Sullivan air compressors capable of compressing 3,000 cu. ft. of free air per min. The engines burned crude oil, for which a 5,000-gal. storage tank was provided. Some water was encountered and this was pumped to the surface through the shaft by pumps capable of handling 18,000 gal. per hr. The center heading was completed to within 100 ft. of each portal in March, 1926, it being necessary to leave 100 ft. unexcavated at each portal to protect the tunnel section from being shattered by the blasting done in taking out approach cuts.

Much soft material was encountered and it was necessary to timber a large portion of the tunnel. Various sizes of timber were used but the principal timbers

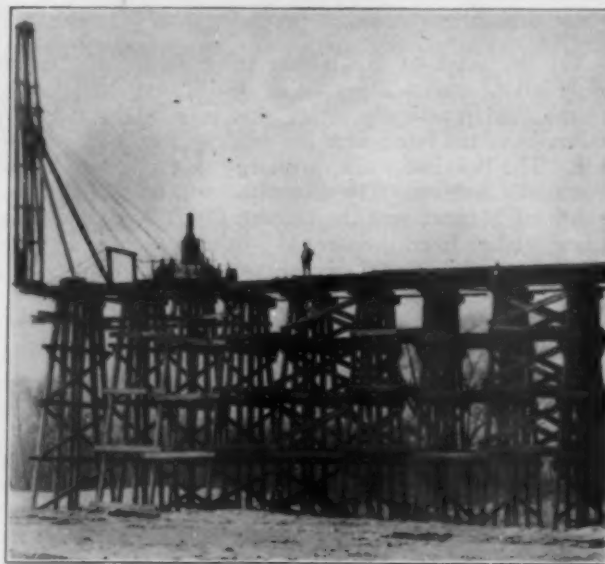
were long leaf pine, 12-in. by 12-in. for arch sets and wall plates, and 4-in. by 6-in. for the lagging. The 30-ft. lengths used for wall plates demonstrated their worth on numerous occasions when squeezing occurred and no doubt saved delays and serious accidents.

The tunnel was enlarged to full section from each portal as soon as the cuts were taken out. This was done from the center heading by the method known as ring drilling. Owing to the soft material already mentioned, it was found necessary to timber the tunnel as the excavation proceeded, to prevent serious falls, and the placing of a permanent concrete lining followed the work of enlargement.

Delay in Deliveries Avoided

To guard against delays due to failure of delivery of sand and gravel from the Ohio River plants at Metropolis, a large part of the aggregate for the lining was delivered in advance of the time set for starting concrete operations. During 1926, over 200 carloads of sand and gravel were hauled overland to the south portal from side tracks at Ozark.

The contractor provided exceptionally complete equipment for handling the concrete lining work, and took advantage of the opportunity afforded by the site to obtain gravity delivery. Owing to the depth of the cut at the south portal, it was possible to locate the aggregate stock piles and the cement house about 80 ft. above grade. Below these, or 48 ft. above grade, a bench 24 ft. wide was excavated at right angles to the center line as the place for the concrete mixer with



More Than Two Miles of Creosoted Pile Trestles Were Driven

overhead charging hoppers of 118 tons capacity fitted with weighing batchers.

The hoppers were charged with a gasoline crane having a 50-ft. boom equipped with a clamshell bucket. This crane operated on caterpillar treads and did all the work in connection with the rehandling of aggregates from the stock piles to the hoppers. Concrete was discharged from the mixer into a metal chute carried on a two-post trestle, at a grade of 5 in. in 12, to a hopper 10 ft. above grade, under which 1-cu. yd. cars were operated on a 24-in. gage track. These cars, in trains of 10,

were hauled in and out of the tunnel by 4-ton storage-battery locomotives.

The concrete lining was built with the aid of portable steel forms which were constructed in three 30-ft. sections. These forms were each equipped with a pneumatic placer and a pair of elevators; one at each end of the section. The elevators were operated by a double-drum hoist with a 20-hp. engine. Each of the form sections was carried on a traveler which moved on double-flanged wheels operating on a rail placed at each side of the tunnel. Enough clearance was provided under the traveler for the operation of 4-yd. cars and 36-in. gage, 20-ton locomotives which moved through and under the concrete forms in the hauling of excavated materials from the enlargement operation.

On arrival at the forms the concrete cars were hoisted in turn to a platform at spring-line elevation, moved by manpower opposite any one of four chutes which discharged directly into the form about three feet below the spring line. When emptied, the cars were moved to the hoist at the other end of the traveler, and lowered to grade. As soon as the form was filled within three feet of the wall plate elevation, the cars were hoisted in the same manner, but, instead of being discharged directly into the forms, they were dumped into hoppers



Grades Were Separated at the Crossings of 146 Highways

over the pneumatic placer, and the concrete was forced by air into the arch-ring section of the lining.

About 200 men were employed day and night on this work, working in two shifts of 10 hours each, 7 days of the week, with one day a month off when the shifts changed.

The surveying on this tunnel presented an unusual problem, as the center line had to be produced toward each end from a line carried down the shaft with the

aid of plumb lines only 14 ft. apart. As a consequence, extreme accuracy was necessary and special instruments were used for this work. After the center heading was driven, the alinement was checked by dropping plumb lines through two 6-in. drill holes sunk from the surface near each portal. The check thus made possible disclosed a variation in alinement of only $\frac{1}{8}$ in.

Tunnel No. 3, which is 2,600 ft. long, was built by the top-heading method. The material encountered was such as to require timbering as the work progressed in

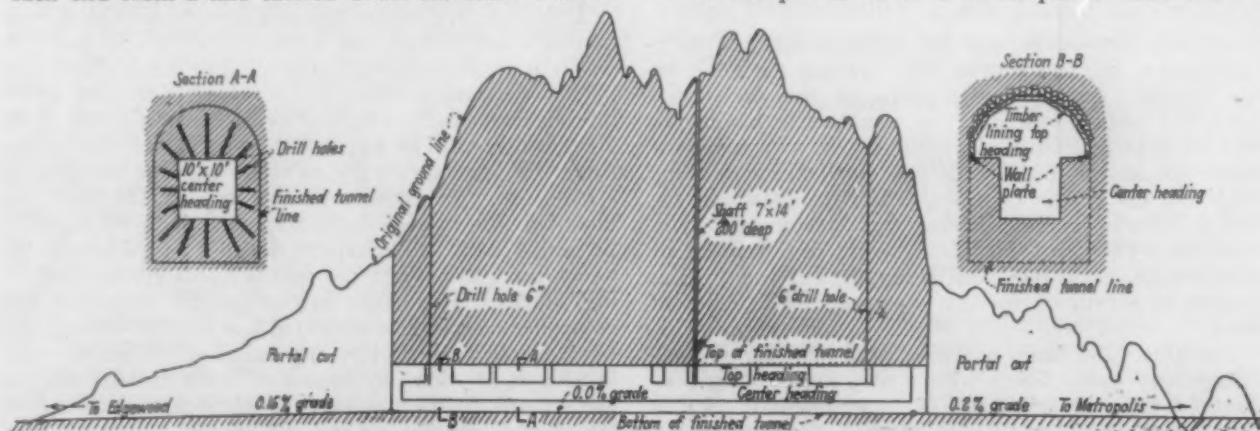


In the Cut at the North Portal of Tunnel No. 2

the heading, and this lining will be left in place during the life of the timber. The posts, arch segments and wall plates are 12-in. by 12-in. yellow pine timbers placed at 4-ft. centers, with 4-in. by 6-in. lagging. The timber was sprayed with fire resisting paint after installation. This tunnel was excavated to sufficient size to permit the installation of a concrete lining over the timber lining after the latter has served its useful life, and still leave the required clearance of 18 ft. horizontal and 23 ft. vertical. Practically the same kind of equipment was used by the contractor as in Tunnel No. 2.

Track Standards

The track was laid with 90-lb. relayer rail on creosoted ties placed 18 to a 30-ft. panel. The ties are



Longitudinal Section Through Tunnel No. 2 and Its Portal Cuts

protected by tie plates punched so that the 90-lb. rail can be replaced with 110-lb. rail without changing the tie plates. Tracks in Kentucky and on the south 70 miles in Illinois are ballasted with a cementing gravel obtained from Gravel Switch, Ky., on the Tennessee river 20 miles east of Paducah. About 3,000 cu. yd. was applied per mile. The tracks on the north end in



The Concrete Plant at the South Portal of Tunnel No. 2

Illinois are ballasted with a small loose gravel from Riverton, Ill., and Palestine.

Rail anchors have been applied for traffic in both directions since this is a single-track railroads. Passing tracks are located about six miles apart and are built to hold 100 cars each. In all, the trackage included 169 miles of main track, 34 miles of yard tracks and connections, and 21 miles of sidings.

In order to handle the business at Paducah, the existing yard at that point was extended and a new connection was built between the Illinois Central and the Paducah & Illinois to facilitate the movement of trains departing from Paducah yard to Fulton, Edgewood or Cairo.

Bluford, Ill., on the new line about midway between Champaign, Ill., and Fulton, Ky., division terminals on the Illinois Central, was selected as the site for a yard and engine terminal. A roundhouse having 12 stalls, 125 ft. in length, was constructed, with room for future expansion to 48 stalls. A small brick machine shop and car repair facilities, a blacksmith shop, etc., and a 500-ton concrete coaling station were also constructed. The yard facilities consist of 10 miles of yard tracks, each 100 cars in length, but the yard is graded to permit of further expansion to 20 miles of track.

Facilities have been provided here also for re-icing refrigerator cars. These consist of a timber icing platform 14 ft. wide and 2,800 ft. long; one-half of it is double decked to handle both crushed cake and ice delivery, while the other half has a single-deck for the

delivery of cake ice only. The platform will permit two 60-car trains to be iced at the same time. Ice is manufactured at Bluford by the Central Illinois Public Service Company, which has erected a plant having a capacity of 50 tons per day and storage room for 4,000 tons.

Signaling Facilities

The approach to each of the three tunnels and movements to and from the passing-tracks at Abbott, between Tunnels 1 and 2, and Bristol, north of Tunnel 3 are governed by three-indication, color-light signals. The protection is essentially the standard absolute permissive block system as generally applied to single-track operation, with modifications, where necessary, to provide overlaps on account of curves in the vicinity of tunnels and switches.

An interesting feature is the application of spring switches at the ends of the passing track at Abbott in order to eliminate the stops required to throw switches by hand. These spring switches are connected so as to produce, in effect, a short piece of double track by diverting all southbound trains through the passing track, the northbound trains holding the main track. If no trains are to be met, or if opposing trains make a good meet, no stops are necessary, the trains trailing out through the spring switches without stopping. For further protection in operating motor cars through the 6985 ft. tunnel, an indicator with push button is



An Unusual Form of Spillway in the Dam of One of the Water Supply Reservoirs on the New Line

located at each portal so that the motor car operator may know whether or not a train is approaching from either direction before he enters the tunnel.

At Maxon, Ky., where the new line crosses the Illinois Central's single-track line between East Cairo and Paducah at grade, electrically operated switches and color-light signals are installed. These are controlled by an interlocker circuit controller located in the ticket office at the depot. The controller consists of six units, three for signals, two for switches and one for locking a hand-throw derail on the house track. The units are mounted side by side on sub-bases and joined together by angle bars. Mechanical locking is provided between units to prevent the possibility of giving conflicting signals. The bases, in addition to supporting the controllers, serve the same purpose as the locking bed on a mechanical interlocking machine. Electric route locking is provided by means of track circuits and an illuminated diagram shows the operator the position of trains and whether or not the signals respond to the operation of the controllers.

Passenger Officers Discuss Competition

Appoint committees on highway and air transportation after many speakers declare that railways should enter these fields

THE American Association of Passenger Traffic Officers held its seventy-second annual meeting at the Hotel Broadmoor, Colorado Springs, Colo., on September 25-26. Emphasis in the discussion was laid on highway competition and the methods of meeting it and on the possibilities of the development of air transport.

Problems Formerly Those of Greater, Now of Declining, Business

L. M. Allen, vice-president of the Rock Island and president of the association, opened the meeting with a short address. He stated that the constant decline in passenger business had brought problems more intricate and involved than any the passenger officers had ever been called upon to face. Prior to 1920 the deliberations of the conventions of the association were devoted in the main to a consideration of methods for handling constantly growing traffic. Since that time more and more attention has had to be paid to the problems caused by declining business. He wondered whether the railroads were really facing this problem properly and if the association by thorough discussion could not aid in its solution.

Railways Have No Quarrel

With Motor Transportation

The railroads, he said, had no quarrel with the development of motor transportation, which was inevitable, but that they must study the situation and endeavor to make adjustments necessary to bring about co-ordination with the newer methods of transport.

The railroads, he added, are not going out of business and full and frank discussion of their problems offered the best way toward progress in meeting them.

Highway Competition

D. M. Bowman, general passenger agent of the Big Four, opened the discussion of the subject of competition. He mentioned not only the actual competition of highway motor coaches, but also that in prospect from air transport lines. The highway motor coach was, he found, developing at an alarming rate in a field where it was not formerly considered as a competitor, i. e., the long-haul. Motor coach lines now cross the continent. Tourist agencies have been building up business for tours as long as 3,000 miles in North America in which haul the railroads do not participate at all. The motor coach operators are offering serious competition for convention traffic and large party transportation over considerable distances. The rail carriers have met the situation by reducing rates, but with far from uniform success and no permanent and satisfactory solution to the problem in sight.

The rail carriers have, he continued, during the past season offered the usual tourist and excursion fares

and have even made some extension, but revenues continue to decline. Service and equipment have been improved. Some railroads have themselves undertaken to operate motor coaches as a substitute for unremunerative trains and as feeders to their rail lines.

Up to Passenger Men to Find Solution

He declared that he believed the time had arrived when the association should actively study this problem with the purpose of making definite recommendations to the railroad executives as to methods for solving it. He moved that a committee be appointed by the president of the association to study the problem. This motion was seconded and after long and spirited discussion—all favorable—it was adopted.

W. F. Griffiths, passenger traffic manager of the Lackawanna, told of the appearance of the unregulated interstate long-haul motor coach in Eastern territory—specifically between Buffalo and New York. These coaches, he reported, are getting a substantial business and are charging a rate about 40 per cent lower than the railroad rate.

Favor Railroad Co-operation

In Operating Motor Coaches

The idea was advanced, and enthusiastically reiterated by a number of speakers, that the only way for the railroads to meet the competition of the motor coach is for themselves to operate motor coaches. No serious objection to this proposal was advanced, although there was some difference as to the feasibility of each individual railroad operating its own motor coach line. Several speakers, while expressing themselves as strongly in favor of railroad operation of motor coaches, also held the opinion that for most sections of the country coach lines owned by the railroads jointly, rather than individually, offered the better prospect of success. Not one voice was raised in opposition to railroad operation of motor vehicles, although such operation, it was pointed out, could not hope to meet the situation in all territories and for all railroads.

Alton Co-operates With Traction Lines

G. J. Charlton, passenger traffic manager of the Chicago & Alton, told of the joint control of the Alton Transportation Company by the C. & A. and two traction lines, this highway subsidiary to be operated to improve service in Illinois territory served by the three railways, to reduce expenses and to be co-ordinated with rail service.

C. C. Howard, passenger traffic manager of the Erie, told of certain week-end and Sunday fares offered experimentally which did not produce the desired results and advocated the co-ordination of highway service with rail service. It was not necessary, he said, for railroads to restrict their transportation service entirely

to the rails, but they could also encompass the newer agencies—motor vehicles and air transport.

Suggest Co-operation With

Motor Transport Division

H. H. Melanson, general passenger traffic manager of the Canadian National, called attention to the newly formed Motor Transport Division of the American Railway Association and suggested a co-ordination of effort between the passenger officers' committee and this division. President Allen suggested the advisability of attendance by this committee at the next meeting of the Motor Transport Division to be held in Detroit, Mich., on October 24-26.

H. E. Watts, passenger traffic manager of the Wabash, stated that he had attended a session of the Motor Transport Division but felt that so far insufficient attention had been paid to the legislative aspect of highway competition; he advocated the regulation of interstate highway motor vehicles by the federal government.

Motor Coaches Have Helped the New Haven

As indicative of what one railroad has done by the operation of highway motor coaches, F. C. Coley, passenger traffic manager of the New York, New Haven & Hartford, stated that, taking 1921 as a basis, his company in 1927 had a decrease of 32 per cent in the number of passengers handled, but an increase of 2.37 per cent in gross revenues. The highway motor coach service, moreover, has enabled the road to take off a considerable number of unprofitable trains, reducing its total train mileage by almost 12 per cent. This reduction in costly train service has enabled the railroad to show an increase in net revenue from passenger service of 80 per cent, comparing 1927 with 1921.

Rail Motor Cars; Pooling of Trains

E. E. Nelson, passenger traffic manager of the Northern Pacific, opened the discussion on the pooling of trains by giving details of the Portland-Seattle-Tacoma and Twin Cities-Duluth pools.

In the case of the former, Mr. Nelson stated that the Northern Pacific, the Great Northern and the Union Pacific, operating over joint track, formerly each provided six trains daily and that there was a demand for more service which would not have been profitable. By pooling, the number of trains run was reduced, with an improvement in the service to the public and a saving of \$150,000 in operating cost to the carriers.

Prior to pooling service between the Twin Cities and Duluth the Northern Pacific operated four trains daily in either direction, the Great Northern three and the Minneapolis, St. Paul & Sault Ste. Marie three. This total of 10 trains each way daily has been reduced to six with no detriment to the service and a saving of \$200,000 in operating expenses to the carriers. The basis of the division of revenues and expenses of the Twin Cities pool, he explained, was somewhat simpler than that in the case of the Portland-Seattle. He explained that prior to establishing the pools the proposal was explained to chambers of commerce and other civic groups to secure their support.

Rail Motor Cars Save Expense

H. H. Melanson, general passenger traffic manager of the Canadian National, opened the discussion on the use of rail motor cars. The type of car (oil-electric) in use on the Canadian National, he said, had proved quite

satisfactory. It had enabled his company to provide service where otherwise it could not have been profitably offered; it had permitted a reduction in the cost of providing service where required by charter or for some other reason, even though unremunerative; and it had enabled the railroad to give more frequent service to the public where such would not have been justified with the more expensive steam train unit. He stated that the mechanical department had eliminated the few slight imperfections in the early designs and that some public prejudice against the cars when first installed has disappeared. The Canadian National in 1927 performed 175,000 passenger train miles with rail motor cars.

Various members gave different figures as to the operating cost per mile of rail motor cars and the variation in the figures gave rise to a question as to whether the methods of computing this cost were uniform on all roads.

Say Rail Car Does Not Build Traffic

No speaker had anything unfavorable to say of the rail motor car, although several stated that in their opinion the car did not induce additional traffic but rather reduced costs in the handling of existing business. Mr. Coley stated that on certain unprofitable lines where service was now being provided by rail cars passengers were paying 74 per cent of operating cost, whereas, if steam trains were used, passenger revenues would amount to but 37 per cent of the cost of the service.

Modernized Old Locomotives a Substitute?

One member told of an experiment being made: modernizing two old locomotives at a cost of \$16,000 each—the purpose being to make these locomotives very economical to operate. While it was realized that, even with efficient locomotives, the steam train operating cost might be larger it was thought possible that the saving in capital outlay might justify the slightly higher operating expense. These modernized old locomotives have not been in service long enough, however, for definite conclusions to be reached.

Transportation of Automobiles

There was some discussion of a proposal to transport automobiles for passengers riding in trains, it being the opinion that many people travel by automobile not primarily because of a desire to take a long motor trip, but rather because they need their automobile at destination. It was the consensus that experiments being made along this line will be watched with interest by the members of the association.

A Traffic Officer's Study Of Aviation in Europe

C. H. Mathews, Jr., assistant general traffic manager of the Pennsylvania, told the association of some of his observations on air transportation in Europe, which he recently visited with C. E. McCullough, general passenger agent, and an officer of the Curtiss Airplane Company—the three being a committee to draw up operating plans for the Transcontinental Air Transport which will begin service in conjunction with the Pennsylvania next spring. Mr. Mathews, who did not speak at great length, stated that he would summarize certain portions of the report prepared by himself and Major McCullough for the benefit of the record.

Some of Mr. Mathews' observations follow: Air travel in Germany has multiplied $32\frac{1}{2}$ times since 1920; $26\frac{1}{2}$ times in the Netherlands. The European lines are subsidized but some of them may not require subsidies within a few years. Rates vary from about 3 per cent higher than rail to 92 per cent higher. There is no one basis for these rates. An air line beginning operations in America cannot consider European rates since no subsidy is offered here and such rates ought to be adequate at the outset, since later it will be easier to adjust them downward than upward.

Ticket Offices and Airport Facilities

European central booking offices (city ticket offices) have scales for weighing passengers and freight, but such service could as well be performed at airports obviating the necessity for equipment at every booking office. Some recommendations based on observation, for a well-conducted airport are: Concrete ground-level loading platforms with shelter, wheeled steps with two hand rails for boarding planes, rubber-tired carts for hand baggage and attractively uniformed personnel, differentiating between ground and flying personnel.

Type of Planes, Crews, Meals

The psychological effect of a tri-motored plane on passengers seems to be favorable; hence it is to be preferred. The crew should consist of a pilot and a mechanic, one of them a radio operator. Some of the European air lines serve meals, but meal stops seem to be preferable to this practice, since they provide a respite and a chance to smoke (smoking not being permitted on planes because of its effect on those susceptible to air sickness); better meals can be provided on the ground; the saving in the weight of a steward and culinary apparatus permits a larger paying load on the plane.

Comfortable Cabin Interiors

In the interior of planes best European experience seems to indicate the advisability of having comfortable, high-backed, light-weight chairs; flush toilets, washing facilities and drinking water (waste to be disinfected and retained on plane until it alights); careful attention to securing an attractive interior color scheme and adequate window arrangements; safety belts, cotton for ears and paper bags for air sickness (these latter seldom needed but possibly advisable).

Rail and Air Co-operation in Germany

There is no interchange or reciprocal traffic between European air and rail lines except in Germany where the State Railway Company honors to destination tickets of air passengers who may have to abandon flight because of a forced landing. In Germany also there is a considerable interchange of express and light package freight between the railway and air lines.

In Europe the usual limit for free baggage is 30 lb. with substantial charges for excess. In Germany air passengers may check heavy baggage by rail at the same rates for excess as those charged to railway passengers.

Advertising

A sectional geographically correct map, showing route traversed, in leaflet form is an attractive form of advertising in use in Europe. The British lines make considerable use of newspaper advertising but this is not the case elsewhere. Baggage stickers, such as are applied

by foreign hotels and steamship lines, are in favor, as are also postcard pictures and cheap monogram stick-pins. Models of airplanes are used as window displays.

Motor coach service from city booking office to landing fields, and vice versa, is provided without added charge, except for a small fee exacted of persons who are airdrome visitors rather than airplane passengers.

Airports

The distance between the city booking office and the airport varies from 10 minutes in Berlin to 35 minutes in London.

Airdromes are owned either by the governments or the municipalities, air lines paying a fee for accommodations. During the past summer Croydon field (London) was handling about 160 passengers daily and Tempelhof (Berlin) and Le Bourget (Paris) about the same number; Schiphol (Amsterdam) about 75. The waiting room facilities at Croydon, Schiphol and Tempelhof are quite attractive, the last named having in addition an indoor restaurant accommodating 300 persons and an outdoor restaurant with seats for 1000. These restaurants, while producing revenue, also make for "air-mindedness" on the part of the public which patronizes them.

It was noticed that where the door to the baggage compartment on planes was on the same side as the passenger entrance there was considerable confusion in loading and unloading. Having the baggage door on the side opposite the passenger entrance obviated this difficulty.

Tickets are examined at the barrier before passengers board the planes and again at destination. Heavy standards connected by chains and perhaps some guards are required to keep back beyond danger onlookers who may be numerous.

Control Towers

Control towers are important. The control towers at the large European airports are in almost constant communication by radio, telephone or telegraph with their planes, interchanging weather and operating information.

It seems to be the consensus of aeronautical experts that from the standpoint of comfort and safety approximately 100 m.p.h. should be the maximum speed of commercial planes.

Training of Pilots

European air personnel is of very high grade. The Dutch have an exceptionally thorough system for the training of transport pilots. After completing the required ground training the applicant must serve at least a year as an assistant pilot, becoming efficient at "blind flying" with instruments as the only guide. Of those who complete this course only two or three out of ten are chosen as full fledged pilots. Salaries are based at about \$4,000 per annum with additional flying pay, bringing average earnings up to about \$7,000. Observation of European practice leads to the conclusion that training in blind flying is advisable; also instruction leading to avoidance of unnecessary banking and in making easy take-offs and landings; flying at proper altitude to avoid rough air.

The Dutch and Germans have made considerable progress in designing finished, attractive interiors. Colors are important for their psychological effect. Aisle

carpets and substantial wall and floor coverings are advantageous. Hand straps over seats are useful. Woven silk racks for small parcels are efficient and are of light weight. Set-in ceiling lights are not often used, but seem desirable equipment. Altimeters to show passengers how high the plane is flying are frequently provided but the wisdom of their provision seems doubtful. First-aid kits, fire extinguishers and emergency exits appear worthy of consideration. Planes over the English channel carry life preservers.

Newer European planes are equipped with cabin ventilators, which seems preferable to depending on windows.

European Subsidies

The percentage of the governmental subsidy to total revenues is 33 in the Netherlands, 50 in Great Britain, 70 in France and 75 in Germany.

Excess baggage and parcel traffic are yielding constantly increasing revenues and this business is so attractive to the operators that some prefer it to passengers. Of commodities moving in this service are gold, valuables, securities, bank documents, cut flowers, fruits, newspapers, latest fashions in textiles, motion picture films, etc. The German Lufthansa increased its parcel business 148 per cent in 1927 over 1926. The development of such business—at least to an extent to take up space not reserved by passengers—seems desirable.

Air and Rail Rates Compared

Comparison of air rates with first-class railway fares follow:

	Air Fare	Percentage Comparison of Air Rate with 1st Class Railway Fares
London to Amsterdam	\$19.44	20.1% higher
Berlin	46.17	34.8% higher
Cologne	27.95	16.4% higher
Geneva (a)	46.17	20.5% higher
Hamburg (a)	38.88	3.7% higher
Marseilles (a)	58.56	5.6% higher
Paris, de luxe	28.07	61.2% higher
Paris, 1st class	25.52	46.6% higher
Paris, 2nd class	22.96	31.8% higher
Prague (a)	50.30	21.2% lower
Vienna (a)	62.45	7.6% lower
Zurich (a)	40.82	2.4% lower

(a) Rail fare including sleeping accommodations.

From Berlin to Copenhagen, Paris and Zurich the air rate is lower than the first-class rail rate. This is also true from Paris to London (2nd class plane) and Paris to Zurich.

Insurance

All the important European air lines insure their passengers. The Lufthansa presents each passenger with an individual policy for \$6,000 when he buys his ticket and he can take out up to \$42,000 at a premium of \$3.96 for each \$6,000.

Officers of the European air lines are interested in educating the public to air travel. The executives make many talks before public groups and visits by school children and other groups to airports are encouraged.

Col. Henderson's Address

At the annual dinner on September 25, Col. Paul Henderson of the Transcontinental Air Transport addressed the convention. He predicted that in ten years air travel would be as general as railroad travel is today.

"Moreover," he said, "I believe that at that time air transportation will be handled almost exclusively by the railroad companies. They are the proper ones to take

over the management of transportation industries, for their experience in this line of business is such that they will make a success of this method of transportation where other companies might fail."

He complimented the Pennsylvania and the Santa Fe on their foresight in co-operating with aerial transport companies in the hauling of passengers.

Night Flying Coming

Colonel Henderson said that air transport companies rely on the railroads for carrying their passengers at night, but that in a short time this will not be necessary. Night flying, he said, is still regarded as being a little unsafe.

"Since we started carrying passengers two years ago," he said, "we have had only two accidents. Both of these, however, occurred at night, and because of this we do not feel that we can yet assure our patrons of entire safety if we transport them at night. We wish to feel that when a patron purchases a ticket for aerial transportation he may do so with the utmost assurance that he will reach his destination safely. We do not feel that we can do this if we are obliged to carry him both day and night, but we believe that we can give complete assurance within a very short time. When this time comes, a transcontinental journey will be made entirely by airplane."

The speaker declared that his company now has no hesitancy in selling a patron a ticket for aerial transportation, as day flying is regarded as being fully as safe as any other mode of travel.

Rapid Progress in Aviation

Colonel Henderson called attention to the rapid progress now being made in aviation, and cited, as an example of this, the fact that his company intends to dispose January 1, of the airplanes which it is now employing in carrying passengers. The advancement in airplane development, he said, is so rapid, that planes purchased last February are already being supplanted in the industry by superior craft. By January 1, he declared, our present ships will be virtually out of date, and will be replaced with the best available at that time. The company, he said, has just purchased 10 planes.

In regard to the interest being evinced in aviation by leading business men of the country, Colonel Henderson said that millions have been invested in air transport in the last few months. He referred also to the great increase in popular interest. Both the interest of capitalists and the public he attributed in large measure to Lindbergh's successful flight across the Atlantic.

Other Improved Methods

And Election of Officers

Gerrit Fort, president of the Raymond & Whitcomb Company, presented the delegates with some information on tourist agency business and advised them to consider the railroads as all-round transportation companies, using any agency of transportation which the public desires. He expressed the opinion that public authority should grant preference to the railroads among the applicants for certificates authorizing such service.

E. L. Bevington, chairman of the Transcontinental Passenger Association, told of the work of the joint folder distributing bureau. There are now 58 western and 4 eastern carriers which utilize its services and

folders are distributed to 15,398 agents of 149 western carriers and to 9,564 agents of 58 eastern and southern carriers. The distribution reaches a total of 11,000,000 folders per annum with a cost of operation of \$3.42 per 1000 folders. The present volume can be increased one-third without any increase in overhead expenses.

C. A. Cairns, passenger traffic manager of the Chicago & North Western, opened the discussion on refinements in train service. He stated that modern roller-bearing equipment had recently been placed in service on the North Western Limited and the Corn King Limited. Observation cars equipped with solariums fitted up with home-like furniture, soda fountain and lounging facilities, electric refrigeration, all had proved their worth; while coach passengers were appreciative of improved seating arrangements provided for them.

C. H. Mathews, Jr., told of savings in the dining car department of the Pennsylvania by improved purchasing methods. A representative of the dining car department and a representative of the purchasing department now buy supplies in the New York markets at 2 or 3 a.m., insuring a good grade of produce and reasonable prices. The dining car schools also promote greater efficiency, he added.

G. J. Charlton explained the advantages to the railroads of joint advertising of excursion offerings in Chicago and St. Louis territory, resulting in adequate publicity with a saving of as much as 50 per cent in the cost of advertising. Some speakers suggested the extension of joint advertising to other services.

Election of Officers

J. D. Rahner, general passenger agent, Florida East Coast, was elected president of the association for the ensuing year. H. H. Melanson, general passenger traffic manager of the Canadian National, was elected vice-president and W. C. Hope, passenger traffic manager of the Central of New Jersey, was re-elected secretary. Two new committees were appointed—one on the highway motor coach and another on aviation. H. F. Fritch, passenger traffic manager of the Boston & Maine, was appointed chairman of the former and C. H. Mathews, Jr., assistant general traffic manager of the Pennsylvania, chairman of the latter.

Presentation to L. M. Allen

The retiring president, L. M. Allen, vice-president of the Rock Island, was presented with a gavel made of wood from the following sources: the old Le Claire House at Davenport, Ia., in which city Mr. Allen began his railroad career; a timber from the first bridge over the Mississippi at Rock Island; a walnut picture frame made from a log from the original block house on Rock Island (1816); cherry wood from a Rock Island Railroad coach of 1884; wood from the office of the Davenport, Ia., station and from the drawer of Mr. Allen's desk in Chicago in 1898 when he first became an officer of the Rock Island.

Co-operative Merchandising of Railway Passenger Service

The address of J. D. Rahner, the incoming president of the association, follows in abstract:

Certain industries are beginning to learn that internal competition within the industry is by no means as serious as the encroachment of other industries, the competition of industry with industry, which for want of a

better term has been characterized "new competition." Change is an inevitable law of progress.

If the new proves substantial, more than a passing public fancy, and finds a permanent place in the economic structure, the old must gradually give way or rapidly adjust itself to meet the new demands.

Industries Change Their Products or Disappear

Business provides many interesting, even dramatic examples of the sweeping changes in industry which progress and modern inventions have brought about. The old-time buggy is a thing of the past, livery stables have become garages, blacksmiths have become mechanics, hands which once fashioned harness now make traveling bags, electric refrigeration is crowding the ice man, stove factories are producing radiators. And so the change goes on. Progress sets a rapid pace, some industries have fallen by the wayside hopelessly obsolete, others have successfully adapted themselves to modern conditions, while a multitude of new industries have been born on the tide of new inventions. Railway transportation has by no means been entirely immune from these influences. Although it would seem to be highly reasonable to expect our railways to retain their place as the basic and indispensable mode of transportation for many years to come, we are all aware that certain developments threaten profitable operation and the maintenance of present standards of efficiency.

The Battle Not Between Concerns.

But Entire Industries

Momentous struggles are taking place on the business battle front for a share of the public purchasing power, oil gaining ground on coal, radios in conflict with phonographs, cement, steel and wood fighting for a place in the construction field. Will Mrs. Smith put her money in the savings bank for a vacation or spend it for clothes or jewelry? Will the Jones family build a comfortable cottage or invest in an expensive car and continue to live in a cramped apartment? The contest for the nation's dollars becomes more and more complicated.

Are we, as an industry, an exception? For a long period, before the advent of motor vehicles, railway transportation was supreme in its field, but with the march of progress we, too, have been drawn into the maelstrom. The biggest problem which confronts us today is not our internal competition of one railway line with another. Our common adversary as an industry is the motor vehicle. I do not need to quote facts and figures. We all know how formidable this competition has become and how it is affecting our revenue. In addition to the motor vehicle there are other factors at work. Steamship lines are increasing their activities and improving the service. Then too the multitude of luxuries of modern life are clamoring for the dollars which might otherwise flow through our ticket office windows. Our competition today is greater than during any past period, but the new competition is between railway transportation and other industries, not between railway and railway.

Other Industries Co-operate to Sell

It may be profitable for us to consider for a moment the ways in which other lines of business are meeting this industrial strife. In the first place consolidations have been encouraged resulting in the foundation of gigantic business mergers, and the development of a host of sectional and national trade associations of varying character. A co-operative consciousness has

been developed within certain industries, not only as a defensive measure, but also looking toward expansion. Economically we are entering an association age of business, characterized by greater co-operation within the industries as opposed to individualistic competition. The activities of such associations cover many phases of their respective lines of business, quality standards, production methods, price making, accounting, co-operative marketing and advertising.

More Complete Application of Trade Association Idea Urged

As in the case of other industries, the answer to our problem would seem to be a closer co-operation within, and a more complete application of the trade association idea. In this respect we can take a tip from big business. True it is that the railway industry has its sectional and national associations which are of inestimable value, but there are still certain phases of passenger traffic operation, of increasing importance in a competitive situation, which are as yet imperfectly covered. I have particular reference to those phases of the passenger traffic business which bring us into direct contact with the public—the merchandising, selling and advertising of our transportation service.

Joint Effort in Advertising and Merchandising

The relative importance of these factors has recently undergone a complete change. While the railways were practically supreme in their field, there was little need of aggressiveness in selling and advertising. It was up to the public either to use the train or resort to the immeasurably slow mode of travel by horse and carriage. With the advent of the "New Competition" we are confronted with the immediate necessity, as an industry, of keeping our service prominently before the public, aggressively selling transportation rather than providing our service as a passive accommodation to be used or not as the public might feel so inclined.

In the realm of public relations a great deal has been accomplished by our centralized public relation bureaus. Public opinion in regard to the railways has been decidedly changed for the better and there is a wholesome understanding of railway problems, but I believe that we are apt to overestimate its effect upon individual action. The public does not make its purchases with an economic consciousness. Mr. Jones does not go to the railway ticket office rather than the bus station moved by a deep consciousness that by patronizing the railways he is aiding in maintaining an essential industry. Although the public may have a better understanding of the railways as an industry, this knowledge does not have a great deal of influence on their action when they come to buy transportation, their choice is swayed by more immediate, selfish motives.

Education of Public Helps in Regulation, But Not in Traffic

By this I do not mean that the education of the public is not beneficial to our industry; it is absolutely essential and doubtless ultimately results in more favorable legislation, but its immediate effect upon traffic volume is negligible. The merchandising and sale of transportation are closely allied. The inter-dependent character of our industry calls for greater co-operation in these particulars than any other. As an example of our weakness in this respect (quoting from the *Railway Age*): a short time ago, a man, not very familiar with railroads, went into a ticket office to buy about

\$300 worth of transportation. He found that the general information bureau had been discontinued and to plan his trip he had to go from office to office and, when he had completed his itinerary, he still had an uneasy feeling that perhaps he had been routed the long way round or over some road not making a specialty of deluxe travel. He finally bought his tickets but not without a feeling of dissatisfaction. The merchandising and selling of transportation is a co-operative problem in which all lines are now, more than ever, concurrently involved. If we are to stem the tide of motor vehicle competition, European travel and the innumerable lines which are competing with us for the public dollar, our service must be sold as attractively, conveniently, pleasingly and aggressively as the products and service of our competitors. Improved merchandising and salesmanship of transportation can only be achieved by greater cooperation within the industry.

Millions for European Travel

Trans-oceanic, cruising and coastwise steamship service is competition that is real and growing more formidable each year. It is estimated that Americans are spending a total of over \$617,000,000.00 annually for trips to foreign countries. Although European travel may represent a potential volume of traffic over certain lines to and from the coasts, this enormous travel expenditure abroad is a real drain on the travel finances of America. A larger percentage of those who contribute to this economically profitless investment in other lands, know little or nothing of their own United States.

Growth of Travel Bureaus Shows Need of Co-operative Merchandising

Within the past decade the technique of selling pleasure travel has undergone a striking transformation. Numerous agencies and travel bureaus have developed, which specialize in selling travel for pleasure. They represent the middle men of the travel industry, who compensate themselves liberally by exacting a commission from the purchaser for their services. They maintain chains of luxurious offices in prominent locations. They are travel department stores in which the patron enjoys the services and advice of travel experts. Why have they developed? Because they fill the need for unified co-operative marketing in the travel industry. They exist and continue to prosper because they sell travel more conveniently, intelligently and attractively than the railway lines themselves.

The Example of the British Railways

Many trade associations have successfully carried on co-operative advertising campaigns in order to more effectively keep their industry, or the products of their industry, before the public. In competing for passenger business we have a joint problem as well as an individual one. The British railways, realizing the need for greater co-operation, have recently undertaken a co-operative advertising campaign with a view to selling railway service in general to the public, emphasizing low rates, the advantages and pleasures of travel, and the superior qualities of a railway journey as compared with other modes of transportation.

As an industry we are in competition with a multitude of common rivals that aggressively solicit the nimble pleasure-producing dollar. Co-operative advertising of our railways as an industry would seem to be the most logical and economical means of stemming the tide of decreasing revenues.

Pere Marquette Installs Centralized Control Signal System

Train movements directed by signal indication, and passing-track switches power-operated, on 20 miles of single track



By the Operation of a Small Lever, the Controller Controls the Operation of Switches and Signals Miles Away

THE Pere Marquette has recently completed an installation of the Union Switch & Signal Company's centralized-control signal system between Mt. Morris, Mich., and Bridgeport, a 20-mile section of single track between two sections of double track. All train movements are directed by signal indication without written train orders, or rights to any train by direction or class. The signals, and also the power switch machines for the passing tracks, are controlled by a train controller located in the office at McGrew yard at North Flint. No operators are required at intermediate stations. Coincident with the installation of the centralized-control system, the three passing tracks were lengthened and the complete changes resulted in a decided improvement in train operation by eliminating train stops and reducing delays on the road, while the spacing between trains has been reduced safely so that track capacity is increased.

The line traverses a rolling country with a maximum grade of 0.3 per cent. From Mt. Morris two tracks extend four miles south to Flint, while from Bridgeport the line is double track for 6.3 miles to Saginaw. Plans had been prepared for a second track between Mt. Morris and Bridgeport, which was estimated to cost about \$750,000 for the 20 miles. About this time the centralized-control system was developed, and it was decided to install it rather than to build a second track. It is anticipated that this new system will increase the track capacity sufficiently to meet the requirements for several years, at a cost of about \$160,000 for the track changes and signaling system. Also the signal equipment will be available without much change for use on

the second track, when necessity requires further capacity.

Traffic Heavy at Certain Periods

This section of the Pere Marquette has become one of the busiest pieces of single track on the system, because trains from five different directions must use it. Referring to a map of the railway, it may be seen that traffic from Port Huron, Bay City, Ludington, and Grand Rapids converges at Saginaw for movement over this section of single track from Bridgeport to Mt. Morris. Northbound, traffic comes from Toledo, Detroit and Flint, from two to four solid trains of automobiles being handled north out of Flint on week days for west and northwest connections via Saginaw. Other automobile trains run from Flint to Ludington and to Port Huron.

Coal from Ohio, Kentucky, Pennsylvania and West Virginia is received by the Pere Marquette from connections at Toledo, and is handled through to north Michigan and to Ludington, to be ferried across to Wisconsin for western connections. In addition, several merchandise trains are operated out of Detroit and Toledo for Saginaw.

This traffic must all be handled over the section of single track from Mt. Morris to Bridgeport. Although it fluctuates considerably, it averages about 14 trains each way daily, of which 3 are passenger and 9 are freight trains. The operating difficulties were not occasioned by the number of trains in the 24 hours, but rather by the fact that the majority of the traffic must be handled over this section at night, especially from about 6 p. m. to 1 a. m.

Loaded cars are pulled from the automobile plants after 5 p. m. and must be moved out promptly to make connections. Deliveries of merchandise are also so arranged that this traffic must be moved over this section of the line during the early part of the night. Coal and other traffic must also be kept moving without delay. Therefore, the big problem in connection with the operation of the line from Flint to Saginaw is to handle a heavy train movement in a short period.

Previous Method of Operation

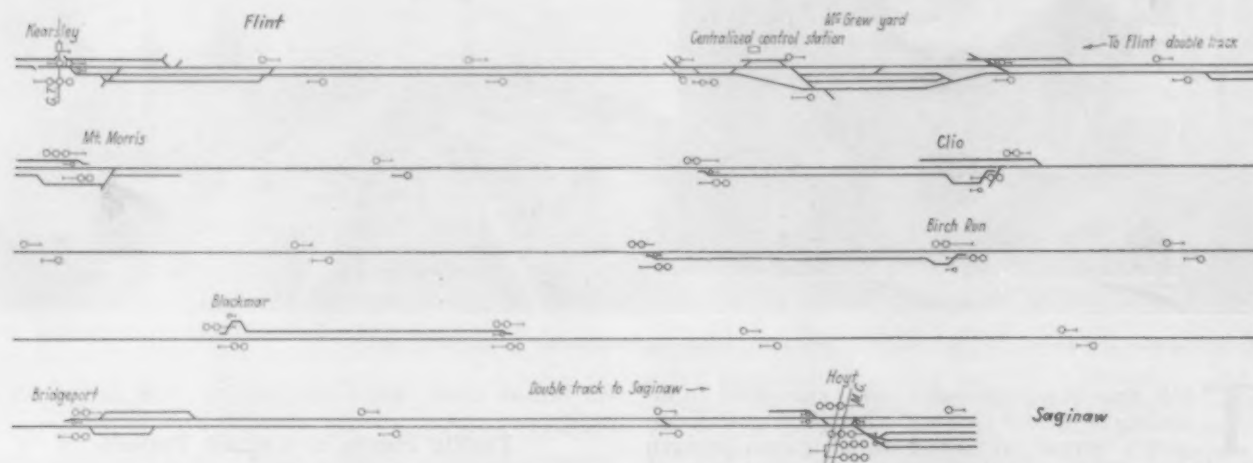
Prior to the installation of the centralized-control signal system, train operation was directed by time table, train orders and manual block. Southbound trains were superior by direction. No train was permitted to follow a passenger train in the same block, but a freight train was permitted to follow another freight train "under caution" after the expiration of 10 min., except where special rules governed. Freight trains were required to clear a passenger train at least 10 min. Form "19" train orders were used in this territory except for a few conditions which called for Form "31" orders.

chines controlled from a central point. One purpose of the long sidings is to permit a train to pull into a siding at fairly good speed without being required to slow down. Another advantage is that, especially with short trains, it is practicable to make meets without either train stopping.

In addition to the centralized-control signal system for the single track, automatic-block signals were installed on the sections of double track so that all train movements from Flint to Saginaw can now be directed by signal indication without written train orders, except in emergency.

New System Controlled from One Point

With the new system, one man, known as the train controller, controls the switches, as well as the signals at each end of the sidings which are used to direct the train movements. Operators are retained at Hoyt to operate the interlocking at the crossing of the Michigan Central, although those at several other points were dispensed with. The new line-up of employees at these stations is as shown in the table. The use of the cen-



Plan of the Layout Between Flint and Saginaw, Showing the Signals and the Main-Line Switches Which Are Equipped for Power Operation Under the Control of the Centralized Station at McGrew Yard

The train sheet for March 31, 1927, a typical 24-hour period under the previous method of operation, showed three passenger trains each way in addition to 11 freight trains northbound, and 13 freight trains southbound. On this date 7 "meets" were made at Mt. Morris, 10 at Clio, 3 at Birch Run, 2 at Blackmar and 2 at Bridgeport. Approximately 47 Form "19" orders and 25 Form "31" orders were issued to trains in this territory on that day. Considerable time was, of course, lost in handling these orders in addition to delays on passing tracks.

With the use of the new control system, the controller is informed automatically of the location of each train, and can postpone the fixing of a meeting point until the trains are near a common point. Closer meets can, therefore, be assured with minimum delays. With this same purpose, the passing tracks have been lengthened. The one at Birch Run, in the center of the territory, is 8,700 ft. long, while the sidings at Clio and Blackmar are 7,900 ft. long. These passing tracks are laid with 90-lb. rail on good ties and are well ballasted with gravel. The No. 12 turnouts were replaced by No. 15 turnouts to permit faster speeds in movements to or from sidings. As a part of the new control system, all passing track switches are equipped with power ma-

tralized-signal system permitted a reduction of 5 telegraph operators.

	Employees at Stations Under Previous Method of Operation	Employees at Stations with Centralized Control	Reduction in Employees at Stations
McGrew Jct.	3 Shifts	3 Shifts	
Mt. Morris	1 Shift	1 Agent	
Clio	3 Shifts	1 Agent	2
Birch Run	2 Shifts	1 Agent	1
Blackmar	None	None	
Bridgeport	3 Shifts	1 Agent	2
Hoyt	3 Shifts	3 Shifts	
			5

How the Machine Is Operated

The train controller and the control machine are located in the yard office at McGrew, north of Flint. Across the top of the control machine is a miniature track model of the territory, with track indicators which show the location of any train occupying the track circuit, including any main-line switch of a passing track. The switch levers are in a horizontal row, each directly below the switch on the track model which it controls. The switch levers are provided with repeater lights, which indicate the actual position of the switch to show that it has followed the movement of the lever.

The signal levers are located in a horizontal row below the switch levers. Only one signal lever is required

to control a group of signals at one end of a passing track. The normal position of the signal lever is on center, which holds all signals at that particular location at "stop." The movement of the lever to the right governs the clearing of the signals for traffic in the corresponding direction, and its movement to the left clears the signals in the same group for traffic in the opposite direction. Whether the signal is to be displayed for the main track or for a siding movement depends entirely on the position of the track switch.

Following standard interlocking practice, the signal lever in the control machine mechanically interlocks the switch lever, thus requiring the controller to return the signal lever to normal before he can reverse a switch. This simply acts as a reminder that the signal is clear before attempting to change the position of a switch.

A small button near the bottom of the board, when set by the controller, gives an audible indication the instant a train enters the track circuit corresponding to the end of the siding under which this button is placed. This audible indication is in addition to the light indication received on the track diagram. Its use is to call the controller's attention to the arrival of a train at a certain point if he should be busy with other work, and it may be cut out at will.

For the operation of the centralized system, only two wires extend from the controller's machine at McGrew yard to Hoyt. These wires are No. 8 hard-drawn copper with weatherproof insulation, and are carried as open wires on the existing telegraph pole line. These



A Dual-Control Switch Machine with Selector Lever, at North End of Clio

wires carry the code impulses corresponding to the control sent out, or the indications brought in. In other words, only two wires are required to clear or set the signals at stop, to operate the switches, to light the indicators on the track model, to light the repeater lights on the switch levers, and to provide an automatic "OS" record of each train movement over each end of each siding.

The automatic block signaling between sidings is the A.P.B. type and is distinct from the centralized-control system. The customary line control wires used for the A.P.B. system are, of course, required.

An automatic train graph is an important adjunct to the control board and is built into the control machine where the controller can conveniently make notations on the graph sheet. The automatic graph records the pass-

ing of each train over a track circuit located at each end of every passing track. Thus the dispatcher has before him an automatically-made record of every train movement in the territory controlled. This gives him information as to whether a train is losing time, running on time, or making up lost time, because the automatic



The Automatic Train Graph Chart Operates Under a Removable Glass Plate on the Desk Below the Levers

train "OS" is itself on the graph as it proceeds past each siding.

Roadside Control Features of System

At each end of each passing track is located apparatus for receiving and sending the code impulses. When a code is sent out by the equipment in the controller's office, the proper selector at the wayside location is operated, resulting in the desired operation of the signal or switch.

When the movement of a switch is complete and locked, a contact is closed which controls the operation of a code-sending device that sends a proper code to the controller's office to pick up a selector that in turn causes the bulb in the light on the control board to be illuminated, thus indicating to the controller that the switch has completed the movement and is locked.

When a train occupies the track circuit on the main line at a switch, a track relay is de-energized, which causes a code to be sent to the controller's office, which operates a certain selector, and results in the indication light for that switch in the track model being illuminated, the graphic train chart mechanism is also operated to indicate the location of the train.

The three signals at a switch are all controlled by one lever in the controller's machine. The signal for a movement off the siding and the main-line signal in the same direction are controlled selectively, depending on the position of the switch.

The signals are semi-automatic, i.e., the control is

carried through the track relay in such a way that a train will hold a protection signal at danger, regardless of the position of the lever in the controller's machine. These signals are also connected into the automatic signal controls, so that permissive indications are given for follow-up movements, and absolute indications are given for head-on protection.

The signals are approach-lighted from head-block to head-block under the control of the controller, when he completes his line-up of a movement over the section between two sidings. Electric locking is provided the same as in a modern interlocking plant. Detector locking prevents the movement of a switch under a train, regardless of the movement of the lever in the controller's machine. Approach locking prevents the movement of a switch after a train has passed a distant signal approaching a switch. However, the controller is free to change the indication of the signal from "proceed" to "stop" at any time. After the train has stopped, subsequent to passing a distant signal, a member of the train crew can communicate with the controller by a telephone located at each siding. The controller may inform him that his train is to go into the passing track. The brakeman then inserts his switch key in a release, which releases the approach locking and permits the controller to operate the switch. A telephone is provided near each switch to facilitate communication with the controller when any crew desires to make an unusual movement or in case of trouble.

Where local switching is to be done frequently, the use of a power switch machine under the control of the controller may cause delay. Therefore, at such locations, a selector lever is provided, by means of which the power machine can be cut out and the switch operated manually. Permission for such operation is secured by the conductor from the controller, who fixes a certain time when the switch must be returned to his control.

The a-c. floating power supply system is used for the operation of the signals and switches and also for the control system. The line feed is 110-volts alternating current, carried on two No. 8 hard-drawn copper wires with weatherproof insulation placed on the two pins on the field side of a new 10-pin crossarm which was added to the existing pole line. Power is purchased at six different points between Flint and Bridgeport, which reduces the length of the feed sections to a maximum of four miles.

The code circuit is entirely separate electrically from all other circuits. The code transmitter at switch locations is operated from the large battery but the coded current transmitted back to the controller's office for indications is taken from a set of 5 cells of 15-a.h. capacity which are provided for this purpose so as to keep the code circuit entirely separate.

Insulated wires are connected to the 110-volt line, and run through the made-up cable to lightning arresters and to Union rectifiers for charging the batteries. At each switch location, there are two sets of main batteries, one set of 5 cells and one set of 7 cells. Part of the signals and control features operate off of each set, and the combined set of 13 cells is used to operate the switch machine. The batteries are Exide Type-KXHS, 75-a.h. capacity. Union Type-M, low-voltage movements are used, which will operate a switch in about 7 sec.

One cell of storage battery is used on each track circuit and is charged by a Union rectifier. The track is bonded with Lunco stranded bonds, using $\frac{3}{8}$ -in. chan-

nel pins. The track wires are No. 9 solid-copper insulated and are run in redwood trunking. Underground parkway cable is used between the case and the signals or switch machines. This cable has a lead covering, two wraps of steel tape and a covering of jute. Okonite insulated wire was used throughout, while the parkway cable came from the Hazard company.

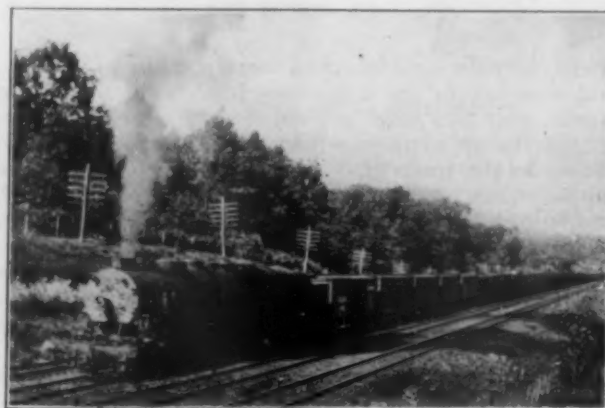
Freight Car Loading

WASHINGTON, D. C.
REVENUE freight car loading during the week ended September 22 amounted to 1,143,214 cars, an increase as compared with the preceeding week of 4,902 cars and of 16,812 cars as compared with the corresponding week of last year. Larger loadings of livestock, coke, ore and miscellaneous freight brought up the total, despite smaller loadings of grain, coal, forest products and less-than-carload merchandise than a year ago. Loading in the Pocahontas and Southern districts only showed a decrease as compared with last year. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading			
Week ended Saturday, September 22, 1928			
Districts	1928	1927	1926
Eastern	254,991	242,664	263,012
Allegheny	225,688	220,809	239,039
Pocahontas	58,315	64,732	63,048
Southern	149,344	167,561	164,557
Northwestern	184,198	177,384	180,790
Central Western	174,362	165,706	171,331
Southwestern	96,316	87,546	93,630
Total Western Dists.	454,876	430,636	445,751
Total All Roads	1,143,214	1,126,402	1,175,407
Commodities			
Grain and Grain Products	60,217	60,279	49,449
Live Stock	36,798	32,599	39,773
Coal	180,955	184,074	211,299
Coke	10,184	9,583	12,334
Forest Products	64,576	69,048	69,894
Ore	64,360	54,320	74,263
L. C. L.	266,157	269,036	269,485
Miscellaneous	459,967	447,543	448,910
September 22	1,143,214	1,126,402	1,175,407
September 15	1,138,312	1,127,643	1,179,259
September 8	991,042	989,799	1,024,998
September 1	1,116,948	1,117,360	1,143,448
August 25	1,080,840	1,109,341	1,128,563
Cumulative total, 38 weeks	37,020,361	38,045,851	38,392,580

The freight car surplus during the period ended September 15 averaged 173,724, as compared with 188,795 cars on September 8. The total included 91,922 box cars, 46,405 coal cars, 15,841 stock cars and 10,588 refrigerator cars.

* * *



A D. L. & W. Freight Train East of Boonton, N. J.

Traveling Engineers Elect Officers

*Closing session of Chicago convention featured by
report on internal combustion engines*

AT the closing session of the Traveling Engineers' Association convention, held at the Hotel Sherman, Chicago, September 25 to 28, inclusive, a report of the earlier sessions of which appeared in the *Railway Age* of September 29, the following new officers were elected: President, James Fahey, traveling engineer, Nashville, Chattanooga & St. Louis, Nashville, Tenn.; first vice-president, Ralph Hammond, road foreman of engines, New York, New Haven & Hartford, Providence, R. I.; second vice-president, R. A. Phair, division master mechanic, Canadian National, Montreal; third vice-president, H. B. Kelly, general road foreman of engines, Pittsburgh & Lake Erie, McKees Rocks, Pa.; fourth vice-president, J. M. Nicholson, fuel conservation engineer, Atchison, Topeka & Santa Fe, Topeka, Kan., and fifth vice-president, A. T. Pfeiffer, road foreman of engines, New York Central, Syracuse, N. Y. David Meadows, assistant master mechanic, Michigan Central, St. Thomas, Ont., was continued as treasurer and W. O. Thompson, equipment assistant, New York Central, Buffalo, N. Y., as secretary.

Papers or reports to which reference was not made in last week's issue were presented on the following subjects: Internal combustion engines; handling locomotives in extended service, and History of the Traveling Engineers' Association. The latter was a paper presented by W. O. Thompson, secretary of the association.

Internal Combustion Engines

In the report on internal combustion engines the committee outlined the development of gas and oil engines for use as railway motive power, devoting considerable space to the working features of the different types of internal combustion engines. A description of the Beardmore engine in use on the Canadian National was included in the report in considerable detail. Brief descriptions were also included of the Ingersoll-Rand Diesel-electric locomotive power plant, the Ingersoll-Rand battery locomotive, the Kitson-Still Diesel-steam locomotive, and the Diesel-Hildebrandt type of combined steam and oil locomotive. Reference was also made to the Diesel locomotives with electric and magnetic gear transmissions in service on the Russian State Railways.

In discussing the Beardmore oil engines in service in the oil-electric cars of the Canadian National, the committee included considerable data showing the operating results which have been obtained with these cars.*

The report summarized the results in the following paragraphs:

"Those cars already have a record of over 1,000,000 miles in local passenger service, and have shown an availability for service of over 90 per cent. The capacity of the latter type; that is, the six-cylinder cars, was strikingly illustrated during a recent power failure in the electrified Mount Royal Tunnel at Montreal. This is a six-mile electrified division, 3.1 miles of which are a tunnel, which has a continuous grade of 0.6 per cent. The train enters on this grade right at the station, so

that a run could not be taken for the grade. Steam power cannot be used in the tunnel through which heavy suburban traffic is carried. One of our six-cylinder Diesel cars was pressed into service and for a period of ten hours carried on the schedule without delay, handling two standard coaches on the 0.6 per cent grade and four standard coaches on the level.

"The performance and serviceability of this type of power has been such that the Canadian National Lines at the present time have in the course of construction a heavy type Westinghouse-Beardmore locomotive of approximately 320 tons and a tractive force of 125,000 lb. Development work is also being carried out on a switch engine equipped with the Westinghouse-Beardmore engine of approximately 40,000 lb. tractive force. This latter development might safely be taken as evidence that most satisfactory results have been realized in the three years' experience with the internal combustion engine of the oil-electric type."

Concerning the Ingersoll-Rand locomotives, the report stated that "the Ingersoll-Rand Company has taken a very active part in the development of the internal combustion engine in its application to rail service and at the present time has fourteen 60-ton locomotives in service and three 100-ton units. Those engines are chiefly of the switching type and, on account of being confined to this service, it does not appear as if there were as much operating data available as would be the case if those cars were operated in branch or main line service.

"Reports from different roads using these units are united in agreeing that the cars are giving desirable service in the work for which they were designed. They show a decided economy in fuel and an availability for service, proving that they are quite capable of continuous yard service and showing an availability for service from 70.6 per cent to 91 per cent."

Kitson-Still Locomotive

An abstract of the portions of the report dealing with the Kitson-Still, Diesel-Hildebrandt, and Russian locomotives follows.

The Kitson-Still locomotive is a combination of an oil engine with a steam engine; the steam is generated in a separate boiler by the waste heat of the oil engine and is expanded in the oil engine cylinder on the opposite side of the piston. The boiler is placed in communication with the water jacket of the engine cylinder and thus both the cylinder jacket heat and the exhaust gas heat are used for generation of steam.

This engine, in addition to its low fuel consumption, offers a very good combination for train starting; steam being an ideal power for this purpose. Of course, if the engine has not been run before starting, it becomes necessary to heat the boiler with an especially provided oil burner in order to generate steam for starting. In so doing, the cylinders are warmed up, ignition is facilitated and starting on oil is rendered more easy.

The presence of a boiler on an oil engine locomotive should prove to be of great value, as it offers a larger amount of stored and available energy; especially with the oil burner in operation, which can be utilized on heavy grades, also in emergency, even though at a sacri-

* These data appeared in an article entitled "Oil-Electric Motive Power on the Canadian National," in the June 9, 1928, issue of the *Railway Age*, page 1319.

fice of fuel economy. Furthermore, steam from the boiler can be utilized to heat passenger trains.

The Kitson oil engine is of the four-cycle type and has eight horizontal cylinders, driving a four-crankshaft placed underneath the boiler and geared to a jack-shaft. The boiler is of the locomotive type with a modified fire-box. The outside cylinder ends are those of the oil engine; the inside ends are those of the steam engine. The cylinders are $13\frac{1}{2}$ in. in diameter by 15 in. stroke. At 450 r.p.m., which corresponds to a locomotive speed of 45 miles per hour, the crankshaft horsepower was about 800 b.h.p. on internal combustion sides, and about 1,000 b.h.p. on both combustion and steam sides. Rail tractive effort at this speed is 7,000 lb. Starting takes place by the action of steam on the inside surface of all eight pistons. The starting tractive force is 24,500 lb., at boiler pressure of 200 lb. per sq. in.

The estimated weight of the locomotive is 156,000 lb., which is 157 lb. per b.h.p. at maximum speed. The wheel arrangement is 2-6-2; the weight on drivers, 114,240 lb., the adhesion factor being 4.5.

The Diesel-Hildebrand Locomotive

As an indication of the lively interest being taken in the Diesel engine throughout the power world, there has been still another innovation of the Diesel steam locomotive introduced, known as the Diesel-Hildebrand, in which the author proposes to improve the steam locomotive with its direct drive by changing its working cylinders so that they may be used either as a Diesel or a steam engine or simultaneously as a Diesel steam engine. With this locomotive, steam would be used only while starting, at which time the D.-H. locomotive will have the same powerful starting ability as the existing steam locomotive of the present.

When running at a normal speed and under average load, Diesel power only will be utilized. While using Diesel power only, the locomotive will operate at a thermal efficiency of approximately 33 per cent and with a mechanical efficiency of 84 per cent, as the axles are directly driven. The engine will be of the double-acting two-cylinder type. While climbing steep grades the D.-H. locomotive will use Diesel plus steam power; when steam is used in addition to Diesel power, the steam will be admitted into the cylinders after the combustion of fuel is substantially completed and after the gases are expended to a pressure about equal the steam pressure; the admission of steam into power cylinders will begin when the load begins to exceed the average. That is, when normal Diesel rating of the engine is reached and tends to overstep, the steam will then carry the load above that which can be carried by the Diesel power. Thus the Diesel power will be used to the fullest extent and cut-off of steam will be adjusted to carry the overload.

The operation of the locomotive by the enginemen should not be complicated. The whole control is being accomplished by the two levers; one will operate the reversing gear in the usual manner; the other lever when moved into the starting position will permit steam to enter the cylinders. While this lever is held in the starting position, no fuel oil will be delivered to the working cylinders. When the control lever is moved into the first notch (i. e. when the Diesel engine begins to fire), steam is turned off and a small amount of fuel oil will be delivered to the cylinders and will increase the fuel delivery until the maximum Diesel rating is reached. With this arrangement the enginemen can use steam only during the starting and when the fuel supply is reached, which corresponds to the normal Diesel rating. The

D.-H. locomotive will not operate by steam alone, its boiler not having sufficient capacity.

Long Run Test of Russian Diesel Locomotives

Two Diesel locomotives of the same proportions were built in Germany for the Russian State Railways; one was being equipped with the electric drive, while the other was equipped with the gear transmission and magnetic clutch. After those locomotives had been in service about four months, operating over a 331-mile division in freight service, it was decided to make a long distance test between Moscow and Baku, a distance of three thousand miles, in order to test the reliability of the locomotive in heavy continuous service; also to try out the result of various alterations made in the locomotive after preliminary tests had been made in Germany. The two locomotives were run with regular freight rating, simultaneously; that is, one train following the other, two to eight hours apart, so that both engines were subject to the same temperature and climatic conditions.

Engine No. 2 with electric transmission made a total of 3,306 thousand gross ton-miles and consumed 43,150 lb. of oil, or an average of 13.05 lb. of oil per thousand gross-ton miles.

Locomotive No. 3, with magnetic gear transmission, over the same distance and under approximately same weather conditions, made 3,455 thousand gross ton-miles and consumed 40,780 lb. of oil, or an average of 11.81 lb. per thousand gross ton-miles, representing a saving of 9.5 per cent in favor of the locomotive with the gear transmission.

This shows a decided fuel economy in favor of the gear transmission, but it is only the test of time that will determine whether the gear transmission will stand up to the severe strain to which it will be subject in heavy type locomotives. If a satisfactory gear transmission can be developed, it will be a decided economic advantage to the Diesel locomotive as applied to rail service.

As fuel economy is the watchword of the day, it is safe to say that the Diesel locomotive, on account of its high thermal and mechanical efficiency, is due to take a large part in the economic field of the future.

The report was signed by R. A. Phair, *Chairman*, C. N., E. R. Boa, N. Y. C., J. E. Bjorkholm, C. M. St. P. & P., R. Hammond, N. Y., N. H. & H., W. A. Pownall, Wabash, and Mark Purcell, N. P.

Handling Locomotives in

Extended Service

The committee which reported on the best methods for successfully handling locomotives in service based its report on replies to a questionnaire which was designed to bring out facts pertaining to the condition of locomotives, the kind of inspection, preparation and attention at intermediate terminals, and methods of handling on the road which have been found essential for successfully operating locomotives over more than one engine district. In the following summary of the information brought out in the answers to the questions, no attempt has been made to adhere to the order in which the questions appeared.

The Effects of Long Runs

The replies indicate that passenger locomotives are being operated on runs varying from approximately 400 miles in length up to more than 900 miles in length. Some, but not all, of the longer runs are in oil-burning service. The longest run mentioned (925 miles on the New York Central) is in coal burning service. It is also evident that freight locomotive runs up to 300 miles in

length are becoming relatively common, while there are numerous cases of runs longer than that, both in coal- and oil-burning territory. The longest freight run reported was 735 miles on the St. Louis-San Francisco, where coal-burning freight locomotives use four different grades of coal and are handled by six different crews en route.

The monthly mileages of active locomotives being operated over long distances vary considerably on different roads, some making as high as twelve to thirteen thousand mile per month in passenger service and four to six thousand miles per month in freight service.

Relatively little definite data concerning the savings effected by long runs was brought forth. The statements differed widely as to the amount of fuel saved, indicating savings from one to three tons for each terminal through which the locomotive runs. In one case no saving at all was indicated, the condition of the fire toward the end of the run offsetting any terminal saving. Savings of \$1,152 a day were reported by the New York Central as the result of a reduction of thirty-six engine despatches daily at each of two terminals, or a total of seventy-two despatches, at an average saving of \$16 each. A further saving of \$510 in a day is estimated, based on two tons of coal saved for each despatchment discontinued.

The Southern Pacific reported that in one district between Los Angeles and El Paso the cost of classified repairs had been reduced from 9.203 cents per mile to 7.71 cents per mile since locomotives have been operating on long runs, and that the reduction in roundhouse forces had saved \$8,000 per month, while the reduction in fuel used at intermediate points amounted to \$2,692 per mile.

A High Standard of Maintenance Essential

The replies to the committee's questions indicate that the condition of the locomotive necessary for its successful use on long runs is not essentially different from that required for equally reliable service on shorter runs. Stress was placed on the proper fit of bearings and on the importance of adequate provision for sustained lubrication, particularly of truck journals and hub plates. On the southwest roads water treatment has some bearing on the condition of the locomotive, reducing the tendency toward boiler trouble and poor steaming, both of which have an important bearing on successful performance on long runs.

The replies to a number of the questions indicate that a high standard of terminal maintenance is being maintained by the roads operating their locomotives over long distances. Some give particular attention to all of the feedwater equipment, stokers, boosters, etc., and some stress the running gear, particular attention being given to keep pounds out of the driving boxes and rods each time the locomotive comes into the terminal. The system of monthly inspection and repairs is also highly regarded as a means for economically keeping locomotives in condition for long runs.

One of the most stressed factors in connection with the preparation and maintenance of locomotives for long runs is the engineman's work report. Most roads that replied to the committee indicate that each engineman is required to report all conditions noted by him at the end of his run, just as he would if the engine were to be cut out at that point, the report, however, going through with the locomotive and being turned in by the engineman giving up the locomotive at its destination terminal. The reports indicate that considerable pressure and education have been required to secure satisfactory reports

from all enginemen on this basis. Some roads have foremen meet the locomotives at intermediate terminals to inspect the work reports and pass on the condition of the locomotive.

The practice with respect to the provision of relief engines at intermediate terminals varies widely. Some roads provide such engines at each terminal, keeping them fired-up and sometimes under steam, while others provide a single locomotive at only one of several intermediate terminals through which the passenger locomotives are running. The latter practice is indicative of the reliability with which the long runs are being performed.

The replies pertaining to various phases of handling locomotives on the road indicate the importance of maintaining a frequent check on the cylinder lubricators and of a good job of firing so that the fire may be in good condition when turned over to each succeeding engine crew. In the case of freight locomotives, good despatching and care to keep down road delays are the particular features of good operation which are of greatest benefit in facilitating successful operation over long distances. The replies indicate that the traveling engineer has much to do with quickly smoothing out the initial difficulties and misunderstandings arising when long runs are first inaugurated and that his attention to the matter of work reports is likely to be required continuously.

The replies received by the committee indicate that the practice of double and triple crewing switch engines is becoming quite general, with many advantages such as reducing the assignment required for a given service, reducing congestion at ash pits and in enginehouses, and fuel saving.

The report of the committee concludes with the following statement: "The outstanding things to be followed up and given special attention are to have the locomotive mechanically perfect to start with; the proper preparation of the packing to be used for engine trucks, trailers and tank boxes; particular attention given to the inspection and condition of all of these bearings as well as to the driving boxes and pins at intermediate terminals. These matters, together with the condition of the fire coming into intermediate terminals where coal burners are used, will be necessary to successful and dependable extended service."

The report is signed by D. L. Forsythe (St. L.-S. F.), chairman; J. N. Clark (Sou. Pac.); C. I. Evans (M.-K.-T.); J. W. McIlvaigh (Mo. Pac.); A. T. Pfeiffer (N. Y. C.), and C. F. Willoughby (Pere Marquette).

Discussion

J. Fahey (N. C. & ST. L.) asked how much time is required at intermediate terminals to prepare the locomotive for a continuation of the run as compared with that required for changing engines; also what changes in passenger and freight schedules have been necessitated by the extension of locomotive runs. The replies indicated that there has been no increase in the time required at terminals and that no changes in the schedules have been necessitated.

In discussing the question of water treatment, L. E. Elliot, water engineer, St. Louis-San Francisco gave the following comprehensive information of conditions on that road: "Any scheme of water treatment involves the use of the blow-off cock to keep the boiler in condition. The Frisco treats all water that has a total hardness in excess of the total alkalinity after the addition of soda ash at wayside tanks in sufficient proportion to maintain at least 20 per cent of the dissolved solids in gage cock samples as soda ash. We have schooled our enginemen

in the use of the blow-off cock for keeping the dissolved solids low enough to prevent foaming so that any number of miles may be made between boiler washings. As an example: In the days of assigned power, a 28-day test only permitted the accumulation of 2,850 locomotive miles. The engine used 493,000 gal. of water, of which 5.6 per cent was blown out with a fuel waste of about 2 per cent. There was no foaming, although at the start of the test the boiler was practically at the foaming point as shown by an analysis of the gage-cock samples. Average fuel performance was 117 lb. per 1,000 gross ton-miles. Later, on one of our long runs, an engine made 2,960 miles and used 494,000 gal. of water without a water change in about seven days, including three liberal rest periods for the benefit of the observer who rode the engine over the entire mileage. The blow-off cock was open 10 minutes on each sub-division. Six sub-divisions were covered, comprising 735 miles. The fire was not knocked out during the test. The mileage made during the two tests was about the same and the availability of the power is obvious from these tests.

"A mountain-type passenger engine made 2,199 miles in continuous fast service without foaming. The gage-cock samples averaged 24 per cent sodium carbonate to the total dissolved solids without the least sign of foaming. By blowing out 11.5 per cent of the 220,000 gal. of water used, with a fuel waste of a little over 4 per cent, the average fuel performance was 0.8 gal. (oil) per car mile. The enginehouse foreman reported $\frac{3}{8}$ in. of soft mud on the mud ring when the boiler was washed. The water used varied from good municipal supply to very hard high-alkali Oklahoma water.

"These tests are cited to show the practicability of long runs without boiler washing. Boiler washing need not interfere with long runs in hard-water territory if the water is treated. Incidentally, the mileage per leaking failure has increased from 28,000 miles 10 years ago, to 12,000,000 miles per failure in 1927, and 18,000,000 miles for the first nine months of this year."

Coolidge Creates Emergency Board in Western Wage Case

PRESIDENT Coolidge issued a proclamation on September 29, creating an emergency board of five members to investigate the wage dispute between the western railroads and members of the Order of Railway Conductors and the Brotherhood of Railroad Trainmen and to report their findings to him within the following 30 days under the provisions of the Railway Labor Act.

The President stated in his proclamation that the dispute between the 55 railroads and their trainmen "now threatens substantially to interrupt interstate commerce within that section of the country wherein the aforesaid carriers operate to a degree such as to deprive the whole or some part of said section of essential transportation service."

The members of the board, as announced at the White House, are: James R. Garfield, Cleveland, Ohio, former Secretary of the Interior; Walter P. Stacy, Raleigh, N. C., chief justice of the Supreme Court of North Carolina; Prof. Davis R. Dewey, Cambridge, Mass., of the Massachusetts Institute of Technology; Chester H. Rowell, Berkeley, Cal., an editor and a former member of the Railroad Commission of California; George T. Baker, Davenport, Iowa, a former member of the Iowa State Board of Education.

This fact-finding commission met at Chicago on Oc-

tober 2 and selected Mr. Garfield as chairman. Opening statements were presented at that time by both parties to the controversy and the board announced that inasmuch as the brotherhoods were the complainants they would be given the first opportunity to present testimony. Mr. Garfield also stated that the board was unlimited in the scope of testimony upon which it might base its findings and that it would decide only those questions which were presented to it.

E. P. Curtis, president of the conductors, declared that the only two classes of railway employees who have not recently received favorable consideration in the matter of increased wages are the western conductors and trainmen. They declined to arbitrate this wage increase because it had already been arbitrated four times—three times in the East and Southeast and once in the west, in April, 1927. He explained that the employees receded from their original demands for an increase of 19 per cent in wages in order not to create a situation that would interrupt commerce.

A. F. Whitney, president of the trainmen, stated that the Washington agreement, which was signed on August 29 by the brotherhood and railway representatives, was not ratified by the committee of general chairmen of the brotherhoods because of the interpretation placed upon certain of its arbitration provisions by the carriers and which the brotherhoods believed to be erroneous. Later, when three members of the Board of Mediation met with the railways and the employees in Chicago, they were also unable to place the same interpretation upon these provisions as the railroads. He called attention to the added burden of handling parcel post matter in baggage cars, the away-from-home expense and the hazards of railway employment as reasons which justify a wage increase. Conductors and trainmen in the West have lost \$13,000,000 in wages since the demands of the same classes of employees were granted in the East in December, 1926, he said. Mr. Whitney pointed out that the double-header rule had been in effect on western railroads since 1903 and for that reason the brotherhoods saw no reason for abolishing it at this time.

K. F. Burgess, general solicitor of the Chicago, Burlington & Quincy, presented the opening statement for the railroads, stating that the 1927 arbitration showed a lower cost of living in the West than in the East, a lower average of railway earnings and higher average annual earnings for trainmen and conductors.

The record will indicate, Mr. Burgess said, that the railroads have been willing at every step of the negotiations to submit the matters in the controversy to arbitration while the brotherhoods were unwilling to take such a step. Mr. Burgess stated that the double-header rule, while it has been in existence for 26 years, was forced upon the railroads in 1903 upon the threat of a strike. On four consecutive mornings the Missouri Pacific, the Missouri-Kansas-Texas, the St. Louis-San Francisco and the St. Louis Southwestern were given the choice of either placing the rule in effect or of subjecting themselves to a strike of their conductors and trainmen, he explained. Later in 1903 about 30 railroads in the western part of the United States and the Canadian Pacific in Canada adopted this rule which prohibits the hauling of more than 40 cars with two locomotives except in cases where the rating of the larger of the two locomotives would permit of its handling more than 40 cars alone. The rule has been held to be unfair in the East, Mr. Burgess said, and at present it is in effect only in western territory. He said that the railroads feel that the rule is contrary to the

policy of American labor and that it is a restriction on the railroad managements, a condition which results in wasteful and uneconomical operation.

The railroads were unwilling to offer a wage increase of more than 6½ per cent because the same increase had been accepted by the firemen through an arbitration proceeding, and by the enginemen in July, 1928, through an agreement which was the result of that arbitration proceeding, Mr. Burgess stated.

The employees occupied the whole of the session of the Emergency Board on October 3 in presenting the testimony of A. J. Evans of Cedar Rapids, Ia., statistician for the Order of Railway Conductors. Among the statistics which were presented, Mr. Evans showed that through freight enginemen since 1913 have received increases in their basic daily rates of pay which total fifty-three cents more than the increases received by the conductors in similar service, likewise he showed that the increases received by local freight enginemen total eighty-nine cents more than those received by conductors. Mr. Evans introduced figures to show that the loaded and empty car miles per conductor per month have increased since 1921, 20.7 per cent in the southeast, 20.9 per cent in the east and 25.9 per cent in the west. He also presented accident statistics intended to show that the position of a conductor can be considered to be a hazardous occupation. Mr. Curtis explained to the board at the opening of its session on October 3 that the Brotherhoods considered for the purposes of this controversy that the basic rate per day represented wages rather than the contention of the railroads that earning power or total earnings per day constituted wages.

I. C. C. Still Favors Competitive Bids

WASHINGTON, D. C.

THE Interstate Commerce Commission sees no reason at this time for changing its policy with respect to the disposition of equipment trust certificates through competitive bidding, which has recently met with some criticism, according to a statement included in the report of Division 4 of the commission, authorizing the Chicago, St. Paul, Minneapolis & Omaha to assume obligation and liability in respect of an issue of \$540,000 of such certificates, to be sold to the highest bidder, which was made public on October 1 in Finance Docket No. 7,039. In this instance Division 4 was composed of Commissioners Meyer, Eastman and Porter, Commissioner Porter taking the place of Commissioner Woodlock. Discussing the subject of competitive bidding the report says:

The applicant invited bids for the certificates from 40 banks and banking houses, and it received but one bid, 98.815 per cent of par and accrued interest. As the average annual cost to the applicant on that basis would be about 5.0075 per cent, the bid was rejected. Subsequently the certificates were offered to Kuhn, Loeb & Co., who have agreed to purchase them at 99.42 per cent of par and accrued interest. On that basis the average annual cost to the applicant would be approximately 4.875.

Our views as to the advantages of competitive bidding are set forth in our report in Western Maryland Equipment Trust, 111 I. C. C. 434, decided June 23, 1926. Since the date of that report, except in a few cases where we felt that the facts justified other disposition, we have required that carriers requesting authority to assume obligation and liability in respect of equipment obligations offer them for sale at competitive bidding.

During the early part of the current year equipment obliga-

tions sold in some instances on such bases that the cost to the carriers was as low as 4.23 per cent. Certain developments in the financial situation during the past few months have narrowed the investment markets, with a resulting increase in rates on long-term securities, including equipment obligations. We feel, however, that this condition does not warrant a change in our policy with respect to the disposition of equipment obligations. Moreover, we are of the opinion that we should do nothing that would tend to discredit the method of disposing of equipment obligations that has been employed with success for the last two years or that would result in the withdrawal of the support of the investment houses that have participated in the sale of such securities.

We can hardly expect bankers to continue to submit tenders for equipment obligation on invitation from carriers if the carriers may reject all bids and after thus testing the investment market place the obligations privately. We are of the opinion that if the offers received for the equipment obligations are not satisfactory the carriers should again call for tenders and accept the most favorable bid or should reject all bids and resort to temporary financing until there is such an improvement in the investment market as will enable a sale to be made on satisfactory terms. In accordance with these views, authority to assume obligation and liability in respect of the certificates under consideration will be granted upon condition that the certificates again be offered for sale at competitive bidding and sold to the highest bidder.

4.9 Per Cent Increase in Car Loading Anticipated

WASHINGTON, D. C.

AN increase of 4.9 per cent in carload shipments of the 29 principal commodities for the fourth quarter of this year, as compared with those for October, November and December of last year, is indicated in estimates of the regional shippers' advisory boards furnished to the Car Service Division of the American Railway Association as the best information obtainable by the commodity committees of the various boards of the transportation requirements which the railways will be called upon to meet. Total loadings of these commodities for the quarter are estimated at 9,279,472 cars, an increase of 431,599 cars as compared with the loading of the same commodities in the corresponding period of last year.

Of the 13 shippers' regional advisory boards, 11 anticipate an increase in their respective districts in transportation requirements for the fourth quarter of the year compared with the same period last year, while the other 2 expect a decrease. The 11 boards which estimated an increase are the Atlantic states, Allegheny, Great Lakes, Northwestern, Pacific Coast, Southeastern, Southwestern, Middle Western, Trans-Missouri-Kansas, New England, and the Pacific Northwest boards. Those estimating a decrease are the Central Western and the Ohio Valley boards.

The estimate by each shippers' regional advisory board of the freight loadings by cars anticipated for the 29 principal commodities in the fourth quarter this year compared with the corresponding period in 1927 and the per centage of increase or decrease follows:

Board	1927	1928	Per Cent of Increase or Decrease
New England	165,511	170,330	2.9 increase
Atlantic States	997,485	1,057,793	6.0 increase
Ohio Valley	1,228,685	1,116,819	9.1 decrease
Northwest	480,265	495,569	3.2 increase
Central-Western	366,837	358,054	2.4 decrease
Pacific Coast	360,228	366,656	1.8 increase
Pacific Northwest	292,156	299,602	2.5 increase
Allegheny	1,034,500	1,195,858	15.6 increase
Great Lakes	547,817	605,418	10.5 increase
Southeast	1,006,201	1,046,847	4.0 increase
Mid-West	1,278,383	1,366,449	6.9 increase
Trans-Missouri-Kansas	456,964	490,422	7.3 increase
Southwest	632,841	709,655	12.1 increase

The large comparative increases in freight car requirements over last year in the Allegheny, Great Lakes and Southwestern Regions are due to a number of factors. In the Great Lakes region, for instance, it is due to the anticipated heavier movement of ore and concentrates, automobiles, trucks and parts, and also potatoes. In the Allegheny region, it is due in part to the anticipated heavier movement of lime, plaster and cement, chemicals and explosives, paper, printed matter and books, and also to coal, although in considering the latter item, consideration must be given to the fact but little coal was shipped from the Allegheny district during the corresponding period in 1927 owing to the suspension of activities at many bituminous mines. In the Southwestern region, the anticipated requirement for freight cars is expected to be stimulated by the heavier movement of grain, cotton, lumber and a number of other commodities.

In submitting reports to the Car Service Division, each board estimated freight car requirements for the principal industries in the territory covered by that board. On the basis of this information, it is estimated that of the 29 commodities, increases in transportation requirements will be required for 23 as follows: All grain; flour, meal and other mill products; hay, straw and alfalfa; cotton; cotton seed and products, except oil; citrus fruits; other fresh fruits; other fresh vegetables; coal and coke; ore and concentrates; clay, gravel, sand and stone (including gypsum, crude and powdered); salt; lumber and forest products; petroleum and petroleum products; iron and steel; castings, machinery and boilers; cement; lime and plaster; agricultural implements and vehicles other than automobiles; automobiles, trucks and parts; fertilizers; paper, printed matter and books, and chemicals and explosives.

For canned goods, which includes all canned food products, catsup, jams, jellies, olives, pickles and preserves, freight car requirements are expected to be about the same as for the fourth quarter in 1927.

Some Decreases Expected

Commodities for which a decrease is estimated are: Potatoes; livestock; poultry and dairy products; sugar, syrup, glucose and molasses, and brick and clay products.

The estimate of transportation requirements by commodities for the fourth quarter compared with the same period last year follows:

Commodity	Actual 1927	Estimated 1928	Estimated Per Cent Inc. Dec.
Grain, all	468,325	508,544	8.6
Flour, meal & other mill products	249,852	266,693	6.7
Hay, straw & alfalfa	84,687	85,108	.5
Cotton	150,092	181,235	20.7
Cotton seed & products, except oil	99,107	107,060	8.0
Citrus fruits	26,373	32,569	23.5
Other fresh fruits	124,597	141,566	13.6
Potatoes	111,954	108,732	2.9
Other fresh vegetables	55,806	56,148	.6
Live stock	441,685	431,183	2.4
Poultry & dairy products	26,349	25,657	2.6
Coal & coke	3,033,956	3,157,032	4.1
Ore and concentrates	352,274	385,731	9.5
Clay, gravel, sand & stone (incl. gypsum, crude and powdered)	859,574	876,980	2.0
Salt	17,430	18,071	3.7
Lumber & forest products	880,598	901,029	2.3
Petroleum & petroleum products	556,717	595,121	6.9
Sugar, syrup, glucose & molasses	52,112	50,619	2.9
Iron and steel	361,805	388,280	7.3
Castings, machinery & boilers	55,516	58,569	5.5
Cement	180,894	188,004	3.9
Brick and clay products	166,604	162,120	2.7
Lime and plaster	54,824	56,053	2.2
Agric. implements & vehicles other than automobiles	30,620	32,825	7.2
Automobiles, trucks and parts	152,150	197,116	29.6
Fertilizers, all kinds	61,371	65,267	6.3
Paper, printed matter & books	78,932	83,475	5.8
Chemical & explosives	62,221	67,220	8.0
Canned goods—All canned food products (includes catsup, jams, jellies, olives, pickles, preserves, etc.)	51,448	51,465	...
Total All Commodities Listed	8,847,873	9,279,472	4.9

Oral Argument on Northern Unification Plan

WASHINGTON, D. C.

A two-day oral argument on the application of the Great Northern Pacific for authority to acquire control of the Great Northern, Northern Pacific and Spokane, Portland & Seattle railways, which would bring within a single control over 26,000 miles of line, although it is proposed that the separate management of the Burlington shall be continued, was begun on October 3 before the full membership of the Interstate Commerce Commission, except Commissioner Woodlock, who is absent.

The opening argument was presented by D. F. Lyons, general counsel of the Northern Pacific, who was followed by Walker D. Hines of counsel for the applicant company. The opposing argument on behalf of the Chicago, Milwaukee, St. Paul & Pacific was presented by Frederick H. Wood, of Cravath, de Gersdorff, Swaine & Wood.

Mr. Lyons, in his argument, said that unification of railroads is the policy of Congress and has been approved and repeatedly urged by the President of the United States, and is being furthered by decisions of the commission in important cases.

"In every branch of industry, combinations are being made resulting in larger and stronger corporations," he continued. "The inability of the Northern lines to make adequate earnings on existing rates and volume of business and many other factors and circumstances all suggested the advisability of submitting this application for authority to combine the Northern Pacific, the Great Northern, and the Spokane, Portland & Seattle railroads."

Mr. Lyons said that the Northern Securities case is not of importance in the present proceedings.

"Not only has there been a change in the law, inasmuch as the commission may now in proper case relieve carriers from the operation of 'anti-trust laws,' but there have been important changes in transportation conditions in the northwest since the decision in the Northern Securities case, and the dangers of monopoly so much feared in 1900 have largely disappeared. When the Northern Securities case was begun in 1903 there were but two transcontinental lines serving the northwest, and the Great Northern did not then reach Tacoma, Wash., or Portland, Ore. The Milwaukee had not built its Puget Sound extension and did not then operate its own trains between the Twin Cities and the head of the lakes. The Union Pacific had no line to Tacoma or Seattle and did not extend to Yakima, Wash. The Spokane International, running north from Spokane to a connection with the Canadian Pacific Railway, had not been constructed. The Canadian National System, extending to the Pacific Coast, had not been created. The Soo Line had not entered upon its program of constructing branch lines and acquiring feeder lines; it had not built to the head of the lakes and it had not acquired the Wisconsin Central. The Panama Canal had not been built. The automobile was in its infancy. The era of good roads, of common carriers by truck and by bus, and universal use of private automobiles was then at most but a dream.

"Competition, deemed so essential in the northwest 25 years ago, furnished then only by the Northern Pacific and Great Northern and sought to be preserved by the Northern Securities decision, is now furnished by many carriers, by rail, by water, and by highway."

Mr. Lyons contended that "there is nothing about the proposed system that is contrary to any requirements of the law as to kind or character or size." The effect of the proposed unification on competition, he said, will not be adverse to the "public interest, and the fears of the Chicago, Milwaukee, St. Paul & Pacific and the receiver of the Minneapolis & St. Louis for their future, if unification be permitted, have, when analyzed, no substantial basis." He said the terms of the leases and provisions for exchange of stock are fair and reasonable, and he cited as strong evidence that they are fair to stockholders the record which contains no objection from any stockholder to the equal treatment of the two stocks. He pointed out also that 70 per cent of the stockholders of the two Northern companies accepted the plan and deposited their stock.

"We believe that the need for economies in operation and for the lowest possible operating costs is greater in the northwest than in any other part of the country," Mr. Lyons continued, "because of the dependency of the northwest on low railroad rates. The northwest is a comparatively new and undeveloped country of great natural resources, a producing section with a small consuming population adjacent to its rail line. As its principal markets are in the middle west and to the east its products are transported long distances and compete in those markets with similar products originating much nearer the market or moving on low water rates. In furnishing service and low rates northwest railroads must cope with many difficulties and handicaps." Among these he mentioned: Long hauls; seasonal character of movement; peak loading in two or three months; adverse weather conditions and mountain grades; unbalanced movement of traffic and increasingly heavy westbound movement of empty cars; slow development of the country served and thin traffic; the competition of the Panama Canal, and the severe competition that results from the fact that there are four transcontinental roads, including the Canadian Pacific, running from the Twin Cities to Puget Sound in the northerly 400 or 500 mile belt, while four roads serve the southerly 1600-mile belt; four roads serve the entire Oregon and California coast south of Portland, about 1200 miles, while six roads serve 300 or 400 miles north from Portland.

Mr. Hines discussed in detail statistics of the operation of the roads and their geographical situation to show that the problems of management would be less than those of the existing systems of the New York Central and Pennsylvania, even if the Burlington were to be included in the system, and that the average earnings per mile would be less than the average for the western district. He also argued that the location of the lines is such that with eastern and western operating headquarters every part of the lines could be more easily supervised than at present with Twin Cities headquarters, while the farthest terminal would be nearer headquarters than that of the Milwaukee line. No change in the position of the Burlington is contemplated, Mr. Hines said, and its operation could not be turned over to that of the new company without the approval of the commission; therefore he expressed the opinion that "the Burlington does not come into the picture at all." Mr. Hines also discussed the questions relating to the effect on competition, pointing out that there would be effective competition for transcontinental traffic on the part of the Canadian lines, the Milwaukee, the Union Pacific and the Panama Canal and that as to 98 per cent of the traffic of the two Northern lines there would either be active competition or there is no

competition now so that the situation would not be changed.

Mr. Wood said in part:

"Without belittling the importance of reducing operating expenses or the desirability of increasing amounts available for dividend distribution or surplus accumulation, these results are in themselves insufficient to justify the merger as being in the public interest.

"Such results were probably expected to follow as a by-product of railroad consolidation, but are not within the statutory tests of the public interest which look to the creation of a national transportation system whose component parts shall be of substantial equal strength, credit and earning capacity and in the formation of which competition shall be preserved as fully as possible. Unless the proposed merger will lead to these ends, or if it will tend to defeat them, it cannot be approved as being in the public interest.

"The ultimate congressional purpose is expressed in paragraph 4 of section 5 which calls for the consolidation of all the railway mileage of the United States into a limited number of systems of which those in the same region shall be of substantial equal strength, and in the formation of which competition shall be preserved as fully as possible and existing routes and channels of trade maintained as far as practicable.

"Unless the proposed merger meets the other two tests, or is, at least, in its ultimate effect consistent therewith, it may not be approved. It meets neither. It is inconsistent with both, and, if authorized, will create a situation which will render impossible the realization of the ultimate Congressional purpose as laid down in the act.

"The combined system will embrace one-fifth of the railroad mileage west of the Mississippi River. Its net income will be nearly one-fourth of the net income of all the roads in that territory. It will embrace more than 11% of the railway mileage of the whole country. It will be approximately $2\frac{1}{2}$ times as large as the largest system now in existence and will be three times as large as most of our major systems. These consequences alone give pause and indicate the extent to which this consolidation would require the creation of systems enormous in size and power,—greatly exceeding as to both any proposed scheme to consolidation suggested either by Professor Ripley, by the commission or by the representatives of any other interests, except the Northern Lines,—if it is to be fitted in to an ultimate rational plan of consolidation meeting statutory requirement.

"The statute contemplates balanced systems in each competitive area and not a collection of strong and weak lines in each. To make the situation worse it combines the strongest lines in the territory against those which are already weaker with two results: First, in so far as a reasonably balanced condition exists today, it exists solely by reason of the independent operation of the lines sought to be united which will be immediately destroyed by their union. Second, by placing them together it destroys all possibility, either of restoring such balance or of creating another to take its place."

THE CHICAGO & NORTH WESTERN is preparing to put into practical use, suggestions made by employees in all departments during the first half of the year. The 381 suggestions which were adopted, out of 540 submitted, covered topics ranging from improvements in mechanical operations in shops to better facilities for conducting the business of the railroad.

Looking Backward

Fifty Years Ago

The five eastbound roads from St. Louis, Mo., have harmoniously agreed upon their percentages for the division of traffic, each to have one-fifth. They have also put the contracting of freight and the making of rates into the hands of one person representing all roads. This system should put an end to rate wars and other abuses.—*Railway Age*, October 3, 1878.

The supreme court of Alabama, in the case of the Alabama Central railroad, has declared unconstitutional a state statute which provides for the assessment of property according to its income, holding that the legislature of Alabama, through the board of assessment, has no power to order that income alone shall be considered in assessing railroad property.—*Railway Age*, October 3, 1878.

The net earnings of the Louisville & Nashville, according to the annual report for the year ended June 30, 1878, show an increase of 58 per cent since 1872-1873—the prosperous year preceding the panic. At the same time the road carried 26 per cent more freight during the past year than in the preceding year, with a revenue of nearly half a million dollars less.—*Chicago Railway Review*, October 5, 1878.

Twenty-Five Years Ago

The Master Mechanics' Association has instructed its committee on standards to revise the specifications for boiler tubes to provide for steel as well as iron tubes. While steel tubes have been used on a number of French railways for about 10 years, only two railroads in this country have so far accepted them.—*Railway Age*, October 9, 1903.

F. L. Thompson, acting roadmaster of the Chicago division of the Illinois Central, has been appointed roadmaster of the Louisville division at Louisville, Ky. L. B. Allen, superintendent of the Dakota division of the Great Northern, has been appointed superintendent of the Cedar Rapids division of the Chicago, Rock Island & Pacific.—*Railway Age*, October 9, 1903.

Following a period of experimentation, the New York Central & Hudson River [now the New York Central] has decided to equip all of its locomotives operating over a four-mile tunnel section on its Harlem line with cab signals. The block signals already in use are of the controlled manual type.—*Railway and Engineering Review*, October 3, 1903.

Ten Years Ago

W. P. Borland, director of the Bureau of Safety of the Interstate Commerce Commission, in reporting on a recent rear collision in Indiana, states: "The urgent need for some further safeguard cannot be overlooked. It is for this purpose that the automatic stop has been devised, and devices of this kind have now been developed sufficiently to warrant service trials on an extensive scale. While it is true that automatic train control devices cannot be expected to perform all their functions with 100 per cent efficiency in the early stages of their development, they cannot be perfected unless put into use on more than an experimental scale and the weak points worked out through actual operation.—*Railway Age*, October 4, 1918.

The existence of a maximum price on grain this year removed all incentive on the part of the farmer to hold his products with the result that the railroads at Chicago, during the two weeks beginning August 5, brought in over 23,000 carloads of grain and shipped out 19,500,000 bu., the greatest volume of grain ever handled in a similar period in any primary market in the world. Up to September 20, the railroads had handled 100,000 more cars of grain than in the corresponding period of 1917.—*Railway Age*, October 6, 1918.

New Books

Books and Articles of Special Interest to Railroaders

(Compiled by Elisabeth Cullen, Reference Librarian,
Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Ferrocarril Intercontinental Panamericano, by Francisco Mardones. History of the Pan-American railway movement, with map of various routes proposed. 23 p. Pub. by Imprenta Nascimento, Santiago, Chile.

Means of Accelerating Freight Trains. Management and Men, by Bertram H. Mann. "A co-operative research bureau for the study of idle time of freight trains will point out ways to decrease the cost of transportation as well as protect a company from unpleasant surprises. New lines of traffic in a rapidly moving world are daily altering traffic requirements." p. 7. Illustrations, charts, and diagrams. "Freight Train Economics No. 5." 48 p. Pub. by Author, Webster Groves, Mo., Apply.

Warpath and Cattle Trail, by Hubert E. Collins. Reminiscences of the heyday Chisholm Trail. "The present line of the Chicago, Rock Island and Pacific Railroad from Caldwell south follows closely the lines of the old Chisholm and Reno Trails, described here. This holds true from Caldwell, Kansas, down to El Reno, Oklahoma. South of this point, I was not familiar." p. 272. Foreword by Hamlin Garland. Illustrated by Paul Brown. 296 p. Pub. by William Morrow & Company, New York City. \$3.50.

Periodical Articles

Railway Electrification in Europe. No. 5—Midi Railway of France (Continued). Modern Transport, September 8, 1928, p. 7-8.

The American Farm Problem, by Thomas T. Campbell. The author operates a 95,000-acre wheat farm in Montana. "Railway rates and waterways transportation," p. 746-747. Mechanical Engineering, October 1928, p. 745-748.

Injunctions in Labor Disputes: Select List of References, by Laura A. Thompson. Material grouped under "Books and Pamphlets", "Periodical Articles", and "Congressional Hearings and Reports." Monthly Labor Review, September, 1928, p. 201-220.

Power Supply for Railway Signals and Automatic Train Control, by C. F. King, Jr. Abridgement of a paper dealing with several systems of automatic block signaling. "Complete copies on request." Journal of the American Institute of Electrical Engineers, September 1928, p. 658-661.

Railroads in France Fight Air Transport, by Savington Crampton. "French railroads have felt the first shock of competition with air transport development, and they are convinced that they must fight for their existence." Boston Evening Transcript, September 15, 1928, pt. 3, p. 9.

Civilization's Debt to Engineering, by Sir William Ellis. From Presidential address to Engineering Section, British Association. "The railway engineers have every reason to be proud of their management of the complex organization represented by great railway systems all over the world..." Modern Transport, September 15, 1928, p. 7-8.

On Inland Transportation and Communication in Antiquity, by William Linn Westermann. In view of the new forms of transport recently come into use, this fascinating article, setting forth when camel, and elephant, and donkey transport came into use and why and at what speeds, to say nothing of the establishment of mail schedules, and the use of chariots, may be of interest. A map of the world in ancient times will add to the enjoyment of the article. "When camels traveled without a load they were said to be 'empty' just as our freight cars are..." p. 372 from an Egyptian papyrus. Political Science Quarterly, September, 1928, p. 365-387.

Odds and Ends of Railroading

Walter A. Johns, formerly a clerk in the division engineer's office of the Pennsylvania at Oil City, Pa., rates a salute now. He graduated from West Point in June and is now a lieutenant of cavalry.

Lucky Girl

Miss Mable Kitson, the daughter of a signalman, has been appointed queen of the English railways. In this capacity she will tour the European continent, acting as an ambassador of good will to the continental railways.

One Thousand Broadway

For 47 years, 1000 Broadway has meant a lot to Nashville, Chattanooga & St. Louis employees, and others who came in contact with that road's officers. It is probably the oldest railway general office building in active service. The old landmark must give way, however, to Nashville's progress, and it will be torn down within the next month or two.

Another Lindbergh

The railways continue to honor the pioneer of trans-Atlantic Air Transportation by naming stations after him. This time it's Lindbergh, Wyo., a station on the new branch of the Union Pacific, 52.8 miles long, which connects the main line at Eghert, Wyo., with the west end of the North Platte branch at Creighton, Wyo. The new branch will be opened October 1.

Highest Railway in the East

The Norfolk & Western maintains that its Abingdon branch is the highest standard-gage railway east of the Rocky mountains. It extends from Abingdon, Va., to Elkland, N. C., 75 miles, and was known as the Virginia-Carolina before its purchase by the N. & W. At the highest point the top of the rail is 3,523 ft. above sea level.

Wild Cargo

Three lions crossed the continent recently from San Diego, Cal., to New York in an express car. Two of the lions were of the African variety. And the other was a sea lion from the north Pacific coast. They are now to be seen at the Bronx zoo in New York. So far as is known, this is the first shipment of this kind ever made from the Pacific to the Atlantic in a passenger train.

No Chance to Travel

Forty years in the cab of a Southern Pacific locomotive only served to whet William S. Fairbanks' appetite for travel. Fairbanks, veteran engineer, stepped down from his cab for the last time recently, joining the ranks of the company's pensioners. Now he plans to see the world.

"It's the first chance I've had to travel," said the veteran who in more than four decades of service has traveled hundreds of thousands of miles.

"He Called for His Pipe—"

Charles W. Jones, for 51 years an employee of the Erie, now a crossing watchman in Suffern, N. Y., is the proud owner of one of the famous underslung pipes smoked by Vice-President Dawes. Jones wrote to the vice-president a few weeks ago asking where he could buy a pipe such as General Dawes smoked. Within a few days there arrived in the mail, with the vice-president's compliments, a pipe identical with the one so often photographed.

Another Clear Conscience

R. F. Watkins, treasurer of the Denver & Rio Grande Western, received a check for \$12, recently, in payment for a ride J. W. Deatherage took on the road from Denver to Montrose,

Colo., in 1913. The check was that of J. N. O'Neil, general agent of the railroad in San Francisco, Calif., who declared a man giving the name of Deatherage had entered the San Francisco office and paid over the money, asking that it be sent to Denver. His conscience has never been clear since he took that ride as an uninvited guest in a cattle car one bleak December, he told Mr. O'Neil.

Passengers Under Bond

Two harvesters from the United States travelled from North Portal, N. D., to Moose Jaw, Sask., in bond under Canadian Customs seals recently. They had taken up their abode in a box car loaded with sand. The railway and customs officials sealed up the car with railroad and customs seals and the train pulled out. The harvesters, tiring of solitary confinement, made a rumpus in the car, but the conductor would not risk the penalty of breaking customs seals and let his passengers ride to Moose Jaw in bond.

Railway Prize Winner

A two-year-old Holstein female owned by the Canadian Pacific supply farm at Strathmore, Alta., won the grand championship at the Edmonton Fair. Not only was the heifer bred at the C. P. R. farm but so also were her sire and dam, as well as three grandparents. The Holstein herd at the farm has been carefully developed over a number of years until, so far as is known, it has become the largest accredited herd on the continent, numbering about 600 head of cattle. That this herd is of fine quality is attested by the fact that they are in demand from Prince Edward Island to the Pacific Coast.

The Aesthetic Impulse

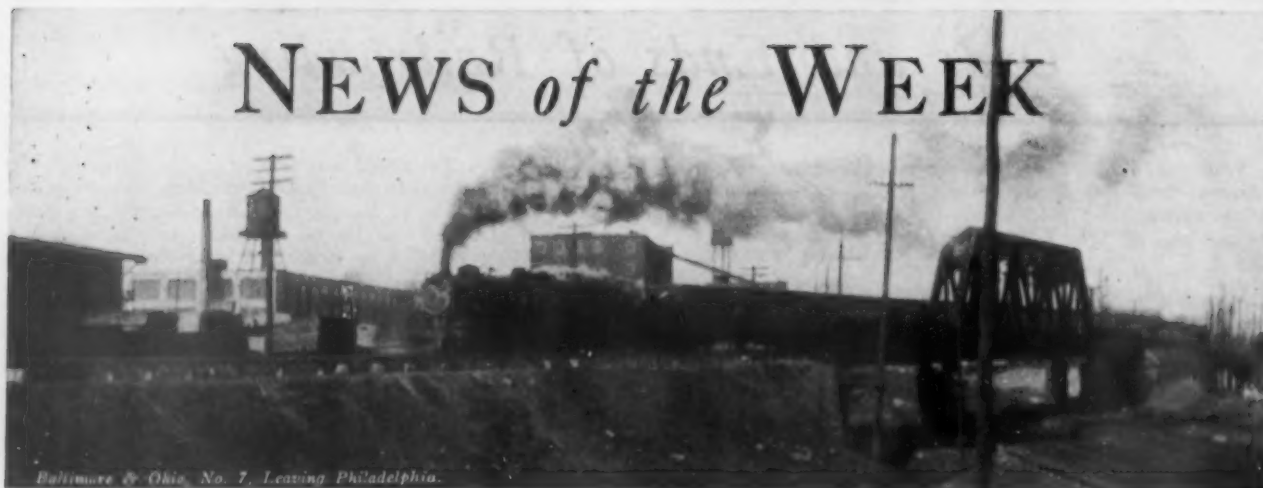
The addition of new and tuneful sound devices to the whistles of railroad locomotives opens a wide field for interesting and aesthetic speculation. Last evening, in the south-western part of the city, a speeding Frisco train gave out a deep-toned chime that suggested the beauties of the old-time steamboat whistle crossed somehow with the melody of cathedral bells. It will not be long, in these days of speed, before the whistles will be blowing melodies as the train speeds, and from that stage of affairs the step to full orchestral effects will be easy to make. It is not difficult to imagine the most hardened speedster coming to a full stop at a grade crossing to enjoy the opening movement of Tchaikowsky's Pathétique—or, should he fail to stop, to be properly received by Chopin's Marche Funebre under the master hand of the locomotive engineer at the siren throttle. Oh, but we are becoming an artistic race—we Americans!—*St. Louis Times*.

More About "Casey" Jones

Ed Pacey, conductor on the Atlanta & West Point, breaks into the public prints with additional facts about "Casey" Jones. The real name of this famous engineer was, it appears, John Luther Jones. He was 6 ft. 4 in. tall, with flashing black eyes and heavy matted black hair. He had a brother, too, in the game. C. A. Tweedy, general chairman of the Brotherhood of Locomotive Firemen and Enginemen, once fired for this brother. It has already been told in these columns how "Casey" met his death on the 638, but we cannot resist quoting a stanza from the famous song. This stanza has a real railroad rhythm:

Put in your water and shovel in your coal,
Stick your head out the window,
Watch the drivers roll,
I'll run her till she leaves the rail,
For we're eight hours late with the U. S. Mail.

NEWS of the WEEK



Baltimore & Ohio, No. 7, Leaving Philadelphia.

THE RAILWAY CLUB OF GREENVILLE, (Pa.) will hold its next meeting on October 16, beginning at 6 p.m. There will be a demonstration of the dispatcher control installation of signals on the Pere Marquette.

THE DIRECTORS of the Interborough Rapid Transit Company, New York City, have elected to membership on their board, Patrick J. Connolly, president of the "Interborough Brotherhood." This brotherhood of employees, with membership in all sections of the company's operating department, was formed in 1916, following the strike by the A. F. L. organization on the Interborough lines.

THEODORE P. ARTAUD was elected vice president of the National Association of Owners of Railroad and Public Utility Securities, Inc., at a recent meeting of the executive committee of that association. Mr. Artaud was in charge of the Washington office of the association as director of research and will continue in that capacity in addition to his new duties.

A BOARD OF ARBITRATION which has had under advisement since July 18 a request of telegraphic, interlocking, tower and station employees on the Kansas, Oklahoma & Gulf for a ten percent increase in wages on September 27, granted an increase on one cent per hour effective September 1. The wage scale of the employees involved ranges from 52 to 64 cents per hour.

Wage Statistics for June

The total number of employees reported by Class I railways as of the middle of June, 1928, was 1,735,677 and the total compensation for the month was \$240,978,172, according to the Interstate Commerce Commission's monthly compilation of wage statistics. Compared with the returns for the corresponding month of 1927 the number of employees shows a decrease of 4.71 per cent, and the total compensation a decrease of 4.02 per cent. The number of employees shows a decrease of 85,813, of which 26,157 were in the maintenance of

way and structures group and 29,022 in the maintenance of equipment group.

Orient Line in Mexico Celebrates

The town of Ojinaga, Chihuahua, on September 15 celebrated the completion of construction of the Kansas City, Mexico & Orient from Chihuahua, to the Rio Grande river in connection with the observance of the Mexican National holiday. This latest piece of construction, between Marquez, Chih., and Ojinaga, 69 miles, has not yet been opened to traffic and no official celebration will be held until the line between Alpine, Tex., and Ojinaga, 85 miles, has been completed and an international bridge has been built over the Rio Grande river. Juan F. Trevino, local manager of the Chihuahua and Mountain divisions of the Orient, was among those who attended the Ojinaga celebration.

B. & M. Employee-Stockholders

Stockholders of the Boston & Maine, to the number of 3030, have subscribed for cumulative seven per cent prior preference stock of the company, offered to them recently in accordance with a vote of the directors, the price being \$103 a share. The stock was quoted recently on the Boston stock exchange at about \$110. The allotment was oversubscribed and the allotment of individuals applying for more than two shares were cut down; and the limit was changed from 20 shares to any one applicant to five shares. Payments are to be completed within 23 months and partial payments will earn interest at seven per cent. This interest will be credited on the purchase price so that actual payments will average about \$97.50 a share. About one thousand employees already held shares of this stock under a privilege granted about two years ago.

Bids for Pacific Great Eastern Received

Premier Simon F. Tolmie, of British Columbia, announced in Victoria last week that two additional bids for purchase of the Pacific Great Eastern Railway in his province had been received

by the Government, and many syndicates were now submitting offers for the road but that any purchaser, to make the road pay, would have to build connections at the south end to Vancouver and at the north end to tap the Canadian National main line to Prince Rupert. Another feature in connection with this road, built by the McBride administration for purposes other than those usually associated with a railroad, is that if given termini it will help to develop the great Peace River region, adjacent to its north end.

Premier Tolmie said also that all offers before the Government have been submitted through British Columbia representatives, and indicate interest in the line by British, Canadian and United States' financial interests.

Equipment Installed in 1928

Class I railroads, in the first eight months this year, installed 42,572 freight cars, according to reports filed by the carriers with the Car Service Division of the American Railway Association. Compared with the corresponding period last year, this was a reduction of 9,702 in the number of freight cars installed. Freight cars on order on September 1 this year totaled 9,257 compared with 18,764 on the same date last year. During August, the railroads installed 6,718 freight cars compared with 7,131 in August last year.

Locomotives placed in service by the Class I railroads during the first eight months in 1928 totaled 995 which was a decrease of 304 compared with the corresponding period last year. Locomotives installed in August were 114 as compared with 104 placed in service in August 1927 while locomotives on order on September 1, totaled 100 as compared with 207 on the same date in 1927. These figures as to freight cars and locomotives include new and leased equipment.

Pennsylvania Train-Stop Installations Approved

The Interstate Commerce Commission, Division 6, has issued a report approving, with certain exceptions, the installations

of the automatic train-stop device, continuous induction type, code system, or the Union Switch & Signal Company, on portions of the Philadelphia and Middle divisions of the Pennsylvania, between Harrisburg and Altoona, Pa., 130.4 miles; on the West Jersey & Seashore, from Camden to Atlantic City, N. J., 56.4 miles, double track; on the Columbus division and part of the Indianapolis division of the Pittsburgh, Cincinnati, Chicago & St. Louis, from Columbus, Ohio, to Indianapolis, Ind., 186.8 miles (of which 46.7 miles is single track, 116 miles double track and 24.1 miles three-track) and on a portion of the Panhandle division of the P. C. C. & St. L. from Pittsburgh, Pa., to Newark, Ohio, 156.41 miles of which 112.49 miles are double-track, 25.8 miles three-track, and 18.03 miles four-track.

The installations include the equipment of 334, 137, 124 and 308 locomotives respectively.

Southern Clerks Being Transferred to Atlanta

The exodus from Washington of approximately 1,100 clerks employed by the Southern Railway who are being transferred to the Atlanta, Ga., offices of the company was begun on September 28 when the first group of about 850 left in special trains for their new headquarters. They are to be followed by others up to October 9, reducing by nearly half the number of employees of the company in Washington. After the federal government decided to purchase the property on which the company's general offices in Washington has been located, together with the office building, at Thirteenth street and Pennsylvania avenue, in connection with the government's program for several new public buildings, the company decided to transfer a large part of its auditing forces to a new office building in Atlanta and the general offices are to be moved to a new but smaller building now under construction in Washington at Fifteenth and K streets. The employees being transferred are largely clerks in the offices of the auditor of freight accounts, auditor of passenger accounts, freight claim agent and superintendent of car records.

Facilitate Canadian Crossing Elimination

By a new interpretation of the present law on the matter and by probable extension of the existing Federal financial aid grade crossing protection or elimination in Canada is to be greatly promoted. At last week's Canadian Good Roads Convention held in Regina, Sask., Hon. Tobias C. Norris, a member of the Dominion Railway Board at Ottawa, gave to the convention, for Hon. H. A. McKeown, Chairman of the Railway Board, the policy the Board proposes to follow. Mr. Norris stated that under a new interpretation of the legislation, which was amended at the last session of the Federal Parliament and governing the Board's administration of the railway grade crossing fund, contributions from

the fund would be available for highways or other works designed to divert a substantial volume of traffic from a level crossing. Heretofore such contributions have been made only where separation was secured by the construction of underpasses or overpasses, or where highway deviation resulted in the complete closing of a crossing.

In a number of cases, however, even where virtually all of the traffic was diverted, a crossing had to be maintained for local use and to give access to the old road. Under the new rule, partial elimination of a crossing will be recognized as justification for a grant from the fund.

Hon. Mr. Norris also outlined the present status of the fund in question. It was created in 1909, with an appropriation of \$200,000 annually for ten years, and at the expiry of that period was extended for another ten years. Nearly two million dollars has been expended from the fund to aid in the elimination of grade crossings, three-fourths of this expenditure having been made within the past three and one-half years, consequent upon amendments to the Act, which permit the board to increase both the percentage of total cost and the maximum amount of its contribution, these being now forty per cent and \$100,000 respectively for any one project. The fund, which now amounts to over \$2,000,000 is due to terminate next April and revert to the general treasury, but Hon. Mr. Norris intimated that should the provinces, either directly or through representatives in the Canadian Good Roads Association, request another extension it was reasonable to suppose that the Dominion Government would accede to the request.

Canadian Roads in August

Increases in gross and net earnings were reported by both the Canadian National and the Canadian Pacific for August 1928 as compared with the corresponding month of 1927. Gross earnings of the former were \$24,429,340 as compared with a gross of \$21,236,265 for August 1927 while the latter reported a gross of \$19,505,045 in August 1928 as against a figure of \$17,258,634 for the corresponding month of 1927.

Net reported by the Canadian National for the month was \$6,084,313 as against \$3,922,627 in August 1927. Operating expenses were \$18,313,638 or an increase of \$1,631,388 over August 1927 expenses.

The Canadian Pacific net for August 1928 was \$913,641 more than in August 1927 while its operating expenses increased by \$3,862,148.

For the eight month period since January 1 of the current year the gross earnings of the Canadian National amounted to \$170,934,671, while in the similar eight month period of 1927 the gross earnings amounted to \$156,273,273, an increase during the eight months of 1928 of \$14,661,397 or 9.38 per cent.

During the eight month period of 1928 the working expenses totalled \$141,361,534 as against \$134,150,427 in the first

eight months of 1927, an increase of \$7,211,106 or 5.38 per cent.

For the first eight months of 1928 the net earnings amounted to \$29,573,136 which compare with \$22,122,845 for the corresponding eight months of 1927, an increase in favor of the current year of \$7,450,290 or 33.68 per cent.

As a result the operating ratio for the first eight months of the present year has been reduced to 82.70 per cent from 85.84 per cent for the similar period of 1927.

For the eight-month period ended with August, net profits of the Canadian Pacific show an increase of \$4,925,851 over the corresponding period of last year, being \$24,927,085, as compared with \$20,001,234. Gross earnings for the eight-month period show an increase of \$13,067,048 over 1927, while working expenses increased \$8,141,197.

The statement of earnings and expenses for the month of August, 1928, and for the first eight months of the year, with comparison, follows:

	August	1928	1927
Gross		\$19,505,045	\$17,258,634
Expenses		14,729,256	13,396,485
Net		\$4,775,789	\$3,862,148
		—Eight Months Ending—	
Gross		\$135,196,960	\$122,129,911
Expenses		110,269,874	102,128,677
Net		\$24,927,085	\$20,001,234
		Gross	Net

Following are the gross and net earnings for each month back to the beginning of 1928:

August	\$19,505,045	\$4,775,789
July	17,986,111	3,699,558
June	17,500,938	2,877,184
May	17,807,974	3,055,717
April	15,296,101	2,404,533
March	16,807,501	3,633,206
February	14,973,001	2,603,058
January	15,320,285	1,878,036

Equipment in Need of Repairs

A new low record for all time in the number of locomotives in need of repair was established by the railroads of this country on September 1, according to reports filed today by the carriers with the Car Service Division of the American Railway Association.

The number in need of repair on that date was 7,954 or 13.4 per cent of the number on line. The record established on September 1 exceeded by 52 locomotives the best previous record attained on July 1 this year.

This new low record which applies to all steam locomotives, more than reaches the goal set, so far as motive power is concerned, by the railroads of this country in 1923 when a program was adopted by them calling for the maintenance of adequate and efficient transportation service. At that time, the goal agreed upon called for a reduction to 15 per cent in the number of steam locomotives in need of heavy repairs. The number of such locomotives in need of repair on September 1 was a decrease of 873 compared with the number in need of repair on August 15, at which time there were 8,827 or 14.9 per cent. Locomotives in need of classified repairs on September 1 totaled 4,486 or 7.6 per cent, a decrease of 440 compared with

(Continued on page 682)

Freight Operating Statistics of Large Steam Roads—Selected Items for June, 1928, Com

Region, road and year	Average miles of road operated	Train-miles	Locomotive-miles		Car-miles		Ton-miles (thousands)		Average number of locomotives on line					
			Principal and helper	Light	Loaded (thousands)	Per cent loaded	Gross, Excluding locomotives and tenders	Net, Revenue and non-revenue	Servicable	Un-servicable	Per cent un-servicable	Stored		
New England Region:														
Boston & Albany.....	1928	407	184,055	195,924	21,314	5,080	67.6	257,308	93,656	96	23	19.4	33	
	1927	407	199,431	214,469	24,462	5,120	64.6	269,148	97,944	106	18	14.2	6	
Boston & Maine.....	1928	2,074	392,079	476,219	47,492	12,191	69.2	612,583	233,777	272	47	14.7	47	
	1927	2,075	486,702	556,184	50,834	12,185	69.1	628,327	250,767	283	66	18.9	34	
N. Y., New H. & Hart.....	1928	2,122	540,551	603,440	34,320	16,136	65.8	849,716	331,174	316	52	14.1	51	
	1927	2,139	586,141	629,303	39,791	16,370	66.9	865,108	350,928	325	66	16.8	40	
Great Lakes Region:														
Delaware & Hudson.....	1928	875	297,885	402,587	47,725	9,240	61.9	559,040	250,565	248	36	12.7	100	
	1927	875	344,994	462,658	53,680	10,045	63.2	636,973	309,238	246	37	13.1	82	
Del., Lack. & Western.....	1928	998	515,516	577,020	64,933	16,628	66.6	940,436	392,055	255	56	17.9	28	
	1927	999	567,454	648,378	80,471	18,099	66.5	1,038,942	446,304	271	50	15.5	19	
Erie (inc. Chi. & Erie).....	1928	2,317	855,067	924,878	83,749	36,616	63.1	2,154,190	867,294	416	112	21.3	49	
	1927	2,317	892,370	987,909	91,715	34,736	64.1	2,071,400	878,521	434	173	28.6	46	
Lehigh Valley.....	1928	1,346	515,770	563,553	61,662	16,044	64.2	949,965	406,821	347	93	21.1	72	
	1927	1,346	555,802	604,709	69,126	17,008	64.2	1,012,829	443,663	363	88	19.5	56	
Michigan Central.....	1928	1,822	548,189	566,090	18,017	19,135	60.2	1,082,000	376,107	201	70	25.8	28	
	1927	1,820	556,736	568,693	20,065	18,548	61.0	1,040,818	374,995	236	62	20.8	60	
New York Central.....	1928	6,459	1,951,133	2,174,988	150,718	76,163	62.5	4,535,384	1,894,264	1,025	359	26.0	273	
	1927	6,478	1,911,600	2,146,386	147,712	74,878	62.9	4,565,016	1,977,974	1,149	257	18.3	363	
New York, Chi. & St. L.....	1928	1,665	587,333	595,198	6,641	19,647	62.2	1,097,226	400,861	225	59	20.8	65	
	1927	1,665	580,572	588,407	6,736	19,830	64.5	1,087,522	402,507	231	50	17.8	49	
Pere Marquette.....	1928	2,181	397,119	402,266	5,467	9,942	62.0	586,810	244,073	176	40	18.7	17	
	1927	2,180	428,562	435,806	6,087	10,855	62.4	631,338	259,194	182	37	16.9	11	
Pitta. & Lake Erie.....	1928	231	118,301	121,292	1,996	4,514	62.9	374,655	216,771	53	18	25.2	10	
	1927	231	117,909	119,421	1,403	4,762	63.3	381,033	223,264	57	19	25.0	13	
Wabash.....	1928	2,497	758,947	789,379	12,347	23,212	63.5	1,311,619	480,034	305	64	17.3	64	
	1927	2,497	666,534	694,230	11,027	20,100	65.1	1,108,118	408,129	327	52	13.7	71	
Central Eastern Region:														
Baltimore & Ohio.....	1928	5,534	1,877,740	2,199,971	166,031	56,326	60.9	3,746,985	1,744,754	1,059	198	15.8	177	
	1927	5,540	2,030,092	2,382,264	200,173	59,380	61.0	4,013,301	1,928,874	1,039	235	18.4	104	
Central of New Jersey.....	1928	691	252,354	271,634	44,791	7,345	59.0	475,963	218,359	176	38	17.6	30	
	1927	691	267,770	292,758	48,245	7,745	57.6	520,451	244,454	185	35	15.7	19	
Chicago & Eastern Ill.....	1928	945	231,969	232,377	3,006	6,178	63.6	362,991	153,033	117	52	30.6	47	
	1927	945	256,365	262,748	3,575	6,688	63.3	400,313	177,031	125	46	26.8	47	
Clev., Cin., Chi. & St. L.....	1928	2,370	712,366	736,699	17,257	22,954	60.3	1,474,469	655,653	320	112	25.9	59	
	1927	2,374	744,575	774,548	19,208	23,150	59.6	1,503,491	668,074	342	93	21.3	36	
Elgin, Joliet & Eastern.....	1928	461	128,979	135,282	5,334	3,629	63.0	273,714	140,800	77	13	14.3	3	
	1927	461	124,188	130,076	4,823	3,489	64.0	264,097	136,960	78	13	14.2	2	
Long Island.....	1928	396	50,082	50,522	14,180	563	52.8	38,673	14,622	56	11	16.3	...	
	1927	393	47,179	51,074	14,252	609	52.5	42,122	16,465	50	14	22.2	...	
Pennsylvania System.....	1928	10,758	3,943,140	4,483,786	398,038	139,636	63.9	9,031,718	4,118,553	2,795	343	10.9	785	
	1927	10,844	4,436,780	4,897,767	381,859	139,529	63.8	9,064,866	4,176,630	2,876	460	13.8	619	
Reading.....	1928	1,128	547,338	602,782	48,943	15,581	59.5	1,075,855	522,343	312	75	19.3	59	
	1927	1,130	595,197	645,183	63,550	15,547	58.9	1,094,468	537,056	321	70	17.8	50	
Pocahontas Region:														
Chesapeake & Ohio.....	1928	2,723	1,029,238	1,105,710	41,860	35,710	56.8	2,855,264	1,533,032	544	95	14.8	97	
	1927	2,650	1,162,087	1,249,368	47,836	40,147	57.2	3,179,949	1,721,019	540	93	14.6	41	
Norfolk & Western.....	1928	2,231	826,459	961,573	33,004	31,397	59.2	2,542,801	1,347,774	524	54	9.3	156	
	1927	2,232	883,511	1,066,815	34,873	31,498	59.0	2,608,610	1,390,282	556	54	8.8	131	
Southern Region:														
Atlantic Coast Line.....	1928	5,116	655,261	659,338	9,538	17,366	61.7	944,476	345,617	433	56	11.5	93	
	1927	5,081	717,353	722,645	11,216	19,235	62.1	1,071,342	412,414	427	58	11.9	99	
Central of Georgia.....	1928	1,898	266,085	267,892	3,889	6,389	69.2	344,396	141,244	145	21	12.9	10	
	1927	1,898	327,797	330,097	7,350	7,465	67.8	405,905	161,605	148	19	11.5	5	
Ill. Cent. (inc. Y. & M. V.).....	1928	6,738	1,884,516	1,903,070	30,108	50,523	61.7	3,178,600	1,232,947	759	107	12.4	27	
	1927	6,594	2,073,682	2,087,235	50,180	55,571	60.3	3,649,632	1,505,122	750	123	14.0	11	
Louisville & Nashville.....	1928	5,061	1,662,215	1,728,851	58,432	35,445	58.5	2,429,097	1,135,059	600	99	14.2	44	
	1927	5,048	1,712,774	1,785,656	58,724	35,771	59.3	2,439,199	1,154,432	616	115	15.7	17	
Seaboard Air Line.....	1928	4,484	535,257	549,833	6,967	13,895	66.5	744,314	288,445	269	62	18.7	20	
	1927	4,267	533,435	564,854	7,000	13,749	65.6	761,959	307,942	240	50	17.1	31	
Southern.....	1928	6,718	1,406,007	1,431,160	28,972	34,348	61.4	1,960,618	755,886	852	100	10.5	112	
	1927	6,718	1,473,187	1,498,169	34,521	36,162	63.4	2,018,129	788,246	849	110	11.5	35	
Northwestern Region:														
Chi. & North Western.....	1928	8,463	1,384,539	1,450,146	23,892	36,550	63.4	2,137,702	843,270	757	129	14.6	94	
	1927	8,463	1,335,357	1,382,603	24,182	33,916	63.3	1,962,431	796,811	726	146	16.8	110	
Chi., Milw., St. P. & Pac.....	1928	11,247	1,583,363	1,685,770	103,808	48,428	62.9	2,822,577	1,161,559	802	131	14.1	177	
	1927	11,202	1,544,864	1,635,918	98,665	46,206	64.3	2,669,404	1,133,932	789	171	17.8	164	
Chi., St. P., Minn. & Om.....	1928	1,724	285,986	304,150	13,105	6,081	66.2	329,421	133,009	153	27	14.8	22	
	1927	1,724	279,062	299,124	12,629	6,236	66.6	336,911	137,520	161	37	18.6	31	
Great Northern.....	1928	8,305	789,895	815,230	51,989	29,891	64.9	1,846,432	897,582	507	127	20.1	86	
	1927	8,164	734,044	758,397	44,021	28,661	66.0	1,751,898	848,925	535	155	22.5	136	
Minn., St. P. & S. Ste. M.....	1928	4,358	465,544	479,281	4,899	13,153	66.8	707,510	309,067	202	35	14.9	22	
	1927	4,368	456,184	469,544	3,408	12,423	67.5	661,656	292,642	288	34	10.6	19	
Northern Pacific.....	1928	6,413	780,841	831,072	45,954	25,530	68.8	1,403,239	597,398	416	154	27.0	35	
	1927	6,476	748,822	802,509	41,578	25,292	70.7	1,386,890	616,346	414	142	23.5	92	
Oreg.-Wash. R. R. & Nav.....	1928	2,246	205,555	216,051	14,830	5,700	66.9	325,462	138,736	124	17	12.0	5	
	1927	2,154	190,809	202,695	16,941	5,443	70.3	309,619	138,779	139	15	9.7	9	
Central Western Region:														
Atch., Top. & S. Fe (In- cluding P. & S. F.).....	1928	10,395	1,400,667	1,510,577	80,329	45,725	67.6	2,596,770	991,660	768	131	14.5	218	
	1927	10,377	1,556,803	1,682,869	87,847	49,020	64.5	2,914,680						

pared with June, 1927, for Roads with Annual Operating Revenues Above \$25,000,000

Region, road and year	Average number of freight cars on line			Per cent un-serv-ice-able	Gross ton-miles per train-hour, ex-cluding locomotives and tenders	Gross tons per train, ex-cluding locomotives and tenders	Net tons per train	Net tons per loaded car	Net ton-miles per car-day	Car miles per car-day	Net ton-miles per mile of road per day	Pounds of coal per 1,000 gross ton-miles, including locomotives and tenders	Locomotive miles per locomotive-day
	Home	Foreign	Total										
New England Region:													
Boston & Albany.....1928	2,631	5,037	7,668	4.4	19,755	1,398	509	18.4	407	32.7	7,670	153	61.1
1927	3,255	5,281	8,536	3.0	18,101	1,350	491	19.1	382	30.9	8,021	166	64.6
Boston & Maine.....1928	12,479	10,790	23,269	5.4	17,989	1,562	596	19.2	335	25.2	3,758	111	54.8
1927	13,657	11,833	25,490	6.7	15,207	1,291	515	20.6	328	23.0	4,029	114	58.0
N. Y., New H. & Hart.....1928	17,595	16,370	33,965	8.1	20,602	1,572	613	20.5	325	24.1	5,202	108	57.7
1927	23,327	18,165	41,492	16.6	18,850	1,476	599	21.4	282	19.7	5,467	114	57.1
Great Lakes Region:													
Delaware & Hudson.....1928	9,777	5,462	15,239	3.2	23,434	1,877	841	27.1	548	32.6	9,545	132	52.8
1927	9,177	5,791	14,968	4.8	22,620	1,846	896	30.8	689	35.4	11,778	143	60.8
Del., Lack. & Western.....1928	18,202	6,814	25,016	4.6	23,327	1,824	761	23.6	522	33.3	13,095	124	68.9
1927	17,602	7,748	25,350	3.2	22,576	1,831	787	24.7	587	35.8	14,887	127	75.6
Erie (inc. Chi. & Erie).....1928	31,462	18,273	49,735	4.4	31,805	2,519	1,014	23.7	581	38.9	12,478	111	63.7
1927	36,751	17,973	54,724	6.5	27,303	2,321	984	25.3	535	33.0	12,637	122	59.3
Lehigh Valley1928	24,217	9,478	33,695	11.4	25,656	1,842	789	25.4	402	24.7	10,075	142	47.5
1927	23,276	8,727	32,003	10.4	25,370	1,822	798	26.1	462	27.6	10,990	140	49.8
Michigan Central1928	20,519	15,428	35,947	4.6	31,063	1,974	686	19.7	349	29.5	6,881	103	71.8
1927	17,982	16,549	34,531	4.4	27,888	1,870	674	20.2	362	29.4	6,870	103	65.8
New York Central.....1928	72,632	69,918	142,550	5.9	31,532	2,324	971	24.9	443	28.5	9,776	99	56.0
1927	70,380	72,174	142,554	4.0	29,674	2,388	1,035	26.4	463	27.8	10,178	102	54.4
New York, Chi. & St. L.....1928	15,122	9,377	24,499	6.4	26,457	1,868	683	20.4	545	42.9	8,026	101	70.5
1927	13,901	10,009	23,910	5.8	25,697	1,873	693	20.3	561	42.9	8,059	107	70.6
Pere Marquette.....1928	11,853	7,554	19,407	4.7	19,114	1,478	615	24.5	419	27.5	3,731	101	62.9
1927	11,252	9,215	20,467	3.6	18,730	1,473	605	23.9	422	28.3	3,963	101	67.3
Pitts. & Lake Erie.....1928	15,485	6,927	22,412	4.9	35,368	3,167	1,832	48.0	322	10.7	31,244	90	58.2
1927	14,000	7,467	21,467	4.6	34,417	3,232	1,894	46.9	347	11.7	32,153	90	53.0
Wabash1928	16,159	10,975	27,134	3.1	28,519	1,728	633	20.7	590	44.9	6,408	112	72.6
1927	15,954	10,926	26,880	2.8	26,617	1,663	612	20.3	506	38.3	5,448	119	62.1
Central Eastern Region:													
Baltimore & Ohio.....1928	75,605	28,173	103,778	5.7	23,289	1,995	929	31.0	560	29.7	10,508	137	62.7
1927	76,016	33,359	109,375	5.1	21,381	1,977	950	32.5	588	29.7	11,606	143	67.6
Central of New Jersey.....1928	18,600	10,108	28,708	3.8	21,270	1,886	865	29.7	254	14.5	10,534	138	49.3
1927	18,808	10,623	29,431	4.0	19,584	1,944	913	31.6	277	15.2	11,794	149	51.7
Chicago & Eastern Ill.....1928	13,693	3,671	17,364	31.6	23,184	1,565	660	24.8	294	18.7	5,397	127	46.5
1927	14,386	4,531	18,917	22.1	22,091	1,561	691	26.5	312	18.6	6,244	133	51.8
Clev., Cin., Chi. & St. L.....1928	24,925	20,685	45,610	4.1	28,043	2,070	920	28.6	479	27.8	9,220	111	58.1
1927	19,395	21,931	41,326	5.0	26,493	2,019	897	28.9	539	31.3	9,381	113	60.9
Elgin, Joliet & Eastern.....1928	9,598	6,494	16,092	5.0	16,117	2,122	1,092	38.8	292	11.9	10,190	121	52.1
1927	9,484	6,760	16,244	6.1	15,464	2,127	1,103	39.3	281	11.2	9,903	128	49.4
Long Island1928	1,664	4,525	6,189	1.6	5,015	772	292	26.0	79	5.7	1,232	290	32.5
1927	1,816	5,619	7,435	1.4	4,644	893	349	27.0	74	5.2	1,397	264	34.0
Pennsylvania System1928	222,689	80,965	303,654	6.5	26,914	2,290	1,044	29.5	452	24.0	12,762	117	51.8
1927	218,032	81,766	299,798	5.6	25,543	2,043	941	29.9	464	24.3	12,838	115	52.8
Reading1928	28,872	11,311	40,183	5.3	22,256	1,966	954	33.5	433	21.7	15,434	136	56.2
1927	27,088	11,918	39,006	3.3	20,685	1,839	902	34.5	459	22.6	15,844	145	60.5
Cochontas Region:													
Chesapeake & Ohio.....1928	32,183	9,156	41,339	2.7	34,737	2,774	1,489	42.9	1,236	50.7	18,763	84	59.9
1927	28,465	12,838	41,301	3.3	31,340	2,736	1,481	42.9	1,389	56.6	21,647	89	68.4
Norfolk & Western.....1928	31,210	7,939	39,149	0.9	42,786	3,077	1,631	42.9	1,148	45.2	20,133	120	57.4
1927	28,797	9,208	38,005	1.3	39,466	2,953	1,574	44.1	1,219	46.8	20,766	127	60.3
Southern Region:													
Atlantic Coast Line.....1928	22,630	8,620	31,250	5.2	20,537	1,441	527	19.9	369	30.0	2,252	103	45.6
1927	21,628	9,210	30,838	5.3	19,821	1,493	575	21.4	446	33.5	2,706	107	50.5
Central of Georgia.....1928	4,988	5,183	10,171	3.6	18,335	1,294	531	22.1	463	30.3	2,481	127	54.6
1927	4,671	7,173	11,844	3.0	17,375	1,238	493	21.6	455	31.0	2,839	131	67.4
Ill. C. (inc. Y. & M. V.).....1928	45,222	19,456	64,678	7.8	23,862	1,687	654	24.4	635	42.2	6,099	124	74.4
1927	42,585	24,356	66,941	7.5	23,734	1,760	726	27.1	749	45.9	7,609	134	81.7
Louisville & Nashville.....1928	45,122	14,801	59,923	9.2	19,266	1,461	683	32.0	631	33.7	7,475	132	85.2
1927	44,283	18,049	62,332	9.9	17,448	1,424	674	32.3	617	32.2	7,622	140	84.1
Seaboard Air Line.....1928	14,490	7,194	21,684	7.6	18,242	1,391	539	20.8	443	32.1	2,144	129	56.2
1927	13,502	8,275	21,777	5.6	17,095	1,377	556	22.4	471	32.1	2,406	130	65.9
Southern1928	48,813	16,041	64,854	8.0	19,276	1,394	537	22.0	388	28.7	3,749	148	51.1
1927	44,577	17,910	62,487	5.2	18,756	1,370	535	21.8	420	30.4	3,911	152	53.3
Northwestern Region:													
Chi. & North Western.....1928	48,517	26,634	75,151	6.6	19,967	1,544	609	23.0	374	25.6	3,321	117	55.5
1927	50,394	28,376	78,770	8.0	17,897	1,470	597	23.5	337	22.7	3,138	130	53.8
Chi., Mil., St. P. & Pac.....1928	48,399	21,137	69,536	3.3	23,002	1,783	734	24.0	557	36.9	3,443	121	63.9
1927	53,748	21,285	75,033	6.6	21,686	1,728	734	24.5	504	31.9	3,374	126	60.3
Chi., St. P., Minn. & Om.....1928	2,559	8,445	11,004	6.8	14,772	1,152	465	21.9	403	27.8	2,572	118	58.8
1927	2,997	8,620	11,617	9.8	14,750	1,207	493	22.1	395	26.9	2,660	118	52.7
Great Northern1928	40,890	8,634	49,524	6.5	28,673	2,338	1,136	30.0	604	31.0	3,603	114	45.6
1927	40,923	7,962	48,885	7.4	28,183	2,387	1,157	29.6	579	29.6	3,466	110	38.7
Minn., St. P. & S. Ste. M.....1928	19,904	5,217	25,121	5.2	17,668	1,520	664	23.5	414	26.4	2,364	96	68.1
1927	20,185	5,585	25,770	4.5	16,631	1,450	641	23.6	386	24.3	2,233	99	49.0
Northern Pacific1928	37,600	6,517	44,117	8.6	23,953	1,797	765	23.4	451	28.0	3,105	138	51.4
1927	37,866	6,383	44,249	8.2	23,913	1,852	823	24.4	464	27.0	3,172	131	46.4
Oreg.-Wash. R. R. & Nav.....1928	8,229	3,640	11,869	8.2	19,871	1,583	675	24.3	390	23.9	2,059	170	54.5
1927	7,498	4,265	11,763	5.7	19,697	1,623	727	25.5	393	21.9	2,147	162	47.6
Central Western Region:													
Atch., Top. & S. Fe. (in- cluding P. & G. F.).....1928	64,425	18,121	82,546	5.0	27,193	1,854	708	21.7	400	27.3	3,180	109	59.0
1927	59,887	17,975	77,862	5.7	26,183	1,872	716	22.7	477	32.6	3,580	110	62.4
Chicago & Alton.....1928	10,794	4,212	15,006	3.7	22,165	1,523	606	23.8	373	25.4	5,591	128	65.5
1927	10,586	4,854	15,440	3.8	19,613	1,471	510	21.2	298	23.8	4,616	148	62.9
Chi., Burl. & Quincy.....1928	48,914	17,914	66,828										

News of the Week

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August 15 while 3,468 or 5.8 per cent were in need of running repairs, a decrease of 433 compared with August 15 Class I railroads on September 1 had 6,504 serviceable locomotives in storage compared with 6,712 on August 15.

On September 1 there were 149,252 freight cars in need of repair or 6.6 per cent of the number on line. This was a decrease of 4,803 cars below the number reported on August 15, at which time there were 154,055 or 6.9 per cent.

Freight cars in need of heavy repairs on September 1 totaled 109,010 or 4.8 per cent, a decrease of 205 compared with August 15 while freight cars in need of light repairs totaled 40,242 or 1.8 per cent, a decrease of 4,598 compared with August 15.

Dotsero Cut-Off Hearing Closes

The hearing held at Denver, Colo., for the Interstate Commerce Commission by the Public Utilities Commission of Colorado, on the application of the Denver & Salt Lake Western for authority to construct the Dotsero cut-off, closed on September 21 and both the applicant and the intervenor, the Denver & Rio Grande Western, were given 30 days in which to file briefs with the commission at Washington.

J. S. Pyeatt, president of the Rio Grande, declared on September 20 that if the Moffat road is allowed to operate the proposed cut-off, which would link the Moffat tunnel with the D. & R. G. W., his road would apply to the commission for a permit to construct a rival cut-off and tunnel. This brought a statement from Norton Montgomery, general counsel for the tunnel district, to the effect that the district will oppose any such attempt. The Rio Grande is opposed to the D. & S. L. operation of the Dotsero cut-off because of the possibility that the latter road might extend its lines into Utah and become a formidable competitor for transcontinental business, Mr. Pyeatt said.

"It would be an economic mistake for the Moffat road to operate the cut-off," Mr. Pyeatt declared. "We expected to be able to make arrangements for the use of a short route to Denver over the Moffat road. When it became apparent that our negotiations were not progressing satisfactorily, I requested our engineers to make an investigation of a new route over the mountains. The most we have is a preliminary survey. We know we can get a line with a two per cent grade. It is not as desirable as the D. & S. L. cut-off and would be only a last resort."

Thomas M. Schumacher, chairman of the executive committee of the D. & R. G. W. and the Western Pacific, stated that those two railroads favored a one-line rather than a three-line operation between Denver and San Francisco, expressing the belief that a three-line route, with the cut-off operated by the Moffat road, would give no better service than the present route via Pueblo. As an example of the advantage to be gained by one-line operation, he said that the Atchi-

son, Topeka & Santa Fe now handles 74 per cent of the Kansas City-California business.

Gerald Hughes, chairman of the board of directors of the D. & S. L., testified on September 21 that the Missouri Pacific, which is a joint owner of the D. & R. G. W., had hindered the attempts to negotiate a trackage agreement for use of the tunnel and cut-off. Until a few months ago, he said, William H. Williams, chairman of the board of the D. & R. G. W., and the M. P., had refused to consider any proposition other than purchase of the D. & S. L. by the D. & R. G. W. The first rental proposed for the use of the tunnel and cut-off, following Missouri Pacific consent to a trackage agreement, was only \$200,000 a year, it was said.

Following completion of the testimony, Elmer L. Brock, general counsel of the D. & S. L. declared that a permit for construction, subject to the conditions asked by the D. & R. G. W., would not be acceptable to the Moffat road.

Traveling Engineers' Exhibit

The Railway Equipment Manufacturers' Association, which sponsored the exhibition of railway equipment and supplies at the thirty-sixth annual convention of the Traveling Engineers' Association at Chicago, September 25 to 28, inclusive, elected the following officers for 1929: President, J. J. Cizek, Leslie Company, Lyndhurst, N. J.; first vice-president, C. M. Hoffman, Dearborn Chemical Company, Chicago; second vice-president, L. B. Rhodes, Vapor Car Heating Company, Washington, D. C. F. W. Venton, Crane Company, Chicago, continues as secretary-treasurer.

The following is a list of the supply companies represented, products on exhibition and representatives in attendance:

Air Reduction Sales Co., New York—Oxy-acetylene welding and cutting equipment. Represented by H. L. Rogers, J. W. Kenefic, T. M. Hamer, R. T. Peabody, B. N. Law and J. S. Strate.

Alumite Mfg. Corp., Chicago—Mechanical lubricating fittings and equipment. Represented by C. A. Fine, J. H. Karow and N. J. Kamen.

American Arch Company, New York—Locomotive arch brick. Represented by J. T. Brandon, T. Mahar, Ed. Cook, A. M. Suesse, T. Ferguson, G. Bean and George Wagstaff.

American Brake Shoe & Foundry Co., Chicago—Brake shoes. Represented by L. R. Dewey, F. P. Biggs, C. F. Weil and J. W. Waters.

American Locomotive Company, New York—Photographs and literature describing three-cylinder locomotive, power reverse gear, steam pipe casing, cast steel equalized tender truck, engine truck box and removable hub liner, cast steel outside bearing engine truck. Represented by N. C. Naylor, Robert Brown, Arthur Haller and W. S. Morris.

American Steel Foundries, Chicago—Models of car truck, reversible strut brake beam, steel locomotive grate, adjustable brake beam head, vertical key coupler yoke, literature. Represented by W. G. Wallace, C. E. Grigsby, W. C. Walsh, F. H. Bassett, W. A. Stearns, C. F. Street, C. V. Broadley and W. E. Walling.

American Throttle Co., New York—Multiple throttle. Represented by F. A. Schaff and R. M. Ostermann.

Ar-An-Ess Mfg. Co., Chicago—Locomotive fire door. Represented by E. H. Bauer.

Ardeo Mfg. Co., Hoboken, N. J.—Automatic drifting valve, automatic safety cylinder cocks, automatic locomotive bell ringer, improved engine and trailer truck cellars, improved car journal oilers. Represented by Charles Stern.

Asco Corporation, Chicago—No exhibit. Represented by W. J. Walsh.

Ashton Valve Co., Boston, Mass.—Recording gages, back pressure gages, wheel press recording gages, wheel press recording gages attachment of a double ram wheel presses, safety valves, driving wheel quartering gage, dead weight gage

tester. Represented by J. F. Gettrust, H. O. Fettinger and Charles Gaston.

Baker-Raulang Co., The, Cleveland, Ohio—Motion picture of electric industrial trucks. Represented by B. C. Hooper and W. F. Hebard.

Baldwin Locomotive Works, The, Philadelphia, Pa.—Caprotti poppet type valve gear. Represented by W. A. Austin, Charles Riddell, Fred A. Neely, C. H. Gaskill, W. H. Evans and W. L. Allison.

Barco Manufacturing Company, Chicago—Power reverse gear, smoke box blower fitting, lubricated plug valves, reservoir joints, metallic engine and tender connections—air, steam heat and water, metallic steam heat connections for cars and rear tenders. Represented by C. L. Mellor, G. S. Lewis, F. H. Stiles, W. J. Behlke, Jr., C. O. Jenista, F. B. Nugent, L. E. Livingston, J. L. McLean and M. Weston.

Barrett-Christie Co., Chicago—Steam trap, air separator, instant hot water heater, steam specialties. Represented by C. M. White and S. O. Olsen.

Bethlehem Steel Co., Bethlehem, Pa.—Model of reversible type auxiliary locomotive. Represented by I. C. Jordan, R. S. Folk, F. M. Morley and G. W. Armstrong.

Bird-Archer Co., The, New York—Boiler water treatment chemicals, boiler blow-off cock equipment, boiler sludge remover equipment. Represented by L. F. Wilson, F. K. Tutt, H. C. Harragin, C. J. McGurn, J. L. Callahan, J. J. Clifford, R. A. Wilsey and S. P. Foster.

Bradford Corporation, New York—Literature on throttle valves and draft gears. Represented by W. C. Doering, J. C. Keene, A. C. Bodeau and E. J. Barnett.

Brake Equipment & Supply Co., Chicago—Air brake repair parts, standard A. R. A. triple valve repairs. Represented by B. Pratt, C. J. Smith and J. F. Pratt.

Morris B. Brewster, Inc., Chicago—Piston and valve stem packing, James driving box with adjustable brass. Represented by Morris Brewster and J. T. Ash.

Buckeye Portable Tool Co., Dayton, Ohio—Pneumatic drills, grinders, buffers, sanders, frame jaw grinders, pencil grinders. Represented by W. R. Gummere and H. W. Leighton.

Burnside Steel Foundry Co., Chicago—Roller side bearings, locomotive firing tools, safety appliances. Represented by W. H. Moore and W. C. Bladin.

Central Valve Manufacturing Company, Chicago—Brass globe, angle and special locomotive valves and gage cocks, washout plugs and monel castings. Represented by J. E. Brown, C. F. Pigott and C. J. Murphy.

Chicago Pneumatic Tool Company, New York—Speed recorder, pneumatic tools and electric tools. Represented by H. R. Deubel, F. O. Duffy and L. F. Duffy.

Clark Manufacturing Company, Philadelphia, Pa.—Piston parter, frame bolt jack, pinion puller, bridge jack, journal jack, rail hook, extension jack. Represented by H. J. Smith.

Coffin, Jr., Company, J. S., Englewood, N. J.—Feedwater heater system. Represented by P. Willis, E. L. Schellens, W. T. Comley, V. C. Oliver and R. A. Smith.

Consolidated Ashcroft, Hancock Company, Inc., New York—Insulators, boiler checks, globe and angle valves, hose strainers, water column steam whistles, steam air gages, consolidated safety valves, dead weight gage tester and hydraulograph. Represented by C. I. Brown, J. H. Bush, C. Allen, F. J. Wilson, J. P. Walsh and C. W. Corning.

Crane Company, Chicago—Passenger car plumbing fixtures, locomotive valves and fittings. Represented by F. W. Venton, J. B. Jordan, J. C. Cole and H. B. Bartlett.

Crosby Steam Gage & Valve Company, Boston, Mass.—Locomotive pop, safety and blow-off valves, steam and air gages, back pressure gages, fluid pressure scales (gage tester), chime whistles, etc. Represented by E. W. Kenyon.

Cut-Off & Speed Recorder Corporation, New York—No exhibit. Represented by C. F. Pennypacker.

Dearborn Chemical Company, Chicago—Water treatment and water treating plants, rust inhibitive material, impregnated wrapper. Represented by R. F. Carr, C. M. Hoffman, J. W. Brashears, F. J. Boatright, L. T. Bryson, I. H. Bowen, L. P. Bowen, L. D. Brown, H. B. Crocker, N. F. Dunn, F. B. Horstmann, R. Q. Milnes, J. W. Nutting, H. P. Ross and A. McTavish.

Detroit Lubricator Company, Detroit, Mich.—Mechanical lubricator, automatic oil feed adjuster, automatic flange oiler and bullseye hydrostatic lubricators. Represented by S. A. Witt, W. B. Drake and C. E. Sperry.

Duff Manufacturing Company, Pittsburgh, Pa.—No exhibit. Represented by C. N. Thulin.

Durametallic Corporation, Kalamazoo, Mich.—Durametallic packing, tire machining apparatus. Represented by C. C. Hall and J. M. Bandish.

Edna Brass Manufacturing Company, Mansfield, Ohio—Mechanical lubricators, air operated cylinder cocks, boiler checks, water column, air manifolds, automatic oilers, oil burners, coal sprinklers, gage cocks and rigid water glasses. Represented by E. O. Corey, F. S. Wilcoxon, E. F. O'Connor and H. A. Glenn.

Electro-Chemical Engineering Corporation, Chicago—Literature regarding electro-chemical process for the prevention of pitting and corrosion in

steam boilers. Represented by L. O. Gunderson and O. W. Carrick.
Estate Stove Co., Hamilton, Ohio—Station and caboose stoves. Represented by W. P. Whitfield.

Ewald Iron Co., Louisville, Ky.—Staybolt and engine bolt iron. Represented by W. R. Walsh.
Fassler, J., Manufacturing Company, Moberly, Mo.—Bushing rollers, boilermakers' tools. Represented by G. R. Maupin and Austin Ruse.
Fairmont Railway Motors, Inc., Chicago—Security unit spark arrester. Represented by R. Fletcher.

Franklin Railway Supply Co., Inc., New York—Locomotive booster model, reverse gears, automatic driving box wedges, driving box lubricators, flexible metallic conduits. Represented by H. P. Ball, W. N. Coyle, H. M. Evans, C. W. Floyd Coffin, J. L. Randolph, S. D. Rosenfelt, Paul Weiler, R. F. DeMott, F. M. Ball, T. L. Reed, J. A. Talty, T. P. Wnclan, C. J. Buck and E. DeH. Caldwell.

Galena Signal Oil Co., Franklin, Pa.—Represented by J. A. Bertin.
Garlock Packing Co., Palmyra, N. Y.—Mechanical packing. Represented by H. J. Ramshaw, J. F. Franey and P. A. Lind.

Garratt-Callahan Co., Chicago—Boiler preservative. Represented by A. H. Hawkinson, W. F. Caspers, J. G. Barclay, H. M. Gray and E. W. Miller.

Gilg, Henry F., Pittsburgh, Pa.—Rolled hollow staybolt steel, wash-out valve. Represented by Henry F. Gilg.

Gill Railway Supply Co., Peoria, Ill. No exhibit. Represented by J. Q. Gill.

Gold Car Heating & Lighting Co., New York—Two-in. steam hose couplers, end train pipe valves, pressure regulating valves, vapor system, automatic drain valves for air pumps. Represented by A. D. Stuver.

Goodall Rubber Co., Philadelphia, Pa.—Subway air hose, steam hose, boiler washout hose, semi-metallic squirt hose, semi-metallic car steam heat hose, car axle generator belt, lip gaskets for railroad air brake coupling. Represented by C. L. Butler.

Graham-White Sander Corporation, Roanoke, Va.—Sanders and spreaders. Represented by W. H. White.

Grip Nut Co., Chicago—Grip nuts. Represented by W. E. Sharp, L. W. Kass and J. R. McNamara.

Gustin-Bacon Manufacturing Co., Kansas City, Mo.—Adjustable locomotive cab seats. Represented by J. W. Foyle, W. E. Davis, William Trout and G. R. Miller.

Hulson Grate Company, Keokuk, Iowa—Locomotive grate. Represented by A. W. Hulson, J. W. Hulson, H. N. Gardner and E. E. Bergman.

Hunt-Spiller Mfg. Co., Boston, Mass.—Duplex cylinder packing, crosshead shoes, valve bushings, cylinder and valve packing, floating rod bushing and air pump bushing. Represented by J. G. Platt, V. W. Ellett, E. J. Fuller, C. L. Galloway, F. B. Hartman, R. R. Wells, F. W. Lampton and D. A. Hall.

Huron Manufacturing Co., Detroit, Mich.—Wash-out and arch tube plugs. Represented by H. N. Reynolds and E. H. Willard.

Hutto Engineering Company, Inc., Detroit, Mich.—Portable machine and grinder for grinding piston valve bushings while in place, vertical machines and grinders for link motion bushings, display of grinders and samples of work. Represented by G. C. Page and G. M. Alderman.

Hyatt Roller Bearing Co., Newark, N. J.—Hyatt roller bearing journal boxes, display of views of new Hyatt equipped main line passenger cars, gas electric, tenders, etc., bearings and cutaway boxes. Represented by C. M. Burdette, T. A. Russell, C. A. Johnson, Geo. A. Buckbee, R. F. Wilson and J. C. Stoker.

Independent Pneumatic Tool Company, Chicago—No exhibit. Represented by F. W. Buchanan.

International Correspondence Schools, Railroad Department, Scranton, Pa.—Lesson papers and circular matter. Represented by C. Ash, F. S. Powell and E. M. Sawyer.

Jenkins Bros., New York—Globe, angle and gate valves, mechanical rubber goods and gage glasses. Represented by G. Royal.

Johns-Manville Corporation, New York—Locomotive and power plant packing, pipe and boiler insulations, passenger and refrigerator car insulations, rigid asbestos shingles and asbestos built up roofing, flooring, asbestos wood and asbestos wood smoke stacks. Represented by W. D. Goddard, P. R. Austin, H. H. Grese, J. C. Younglove and H. R. Poulson.

Leslie Company, Lyndhurst, N. J.—Steam heat regulators, reducing valves, pump pressure regulators and self-cleaning strainers. Represented by S. I. Leslie and J. J. Crek.

Lima Locomotive Company, Lima, Ohio—Literature describing super-power steam locomotive. Represented by W. H. Winterrowd, A. C. Steinmetz and M. R. Tate.

Locomotive Finished Material Company, Atchison, Kans.—Sectional cylinder and bull ring packing, floating bushing driving or engine truck box and blow-off muffler. Represented by C. Hastings, E. V. Lea and R. L. McIntosh.

Locomotive Firebox Company, Chicago—Thermic syphons. Represented by G. N. DeGuire,

A. A. Taylor, L. A. Pyle, J. Baker, C. A. Seley, B. E. Larson, H. D. Cameron, E. J. Reardon, E. F. Smith, A. E. Wheeler, J. Rapp, E. E. Graves and R. L. Belnap.

Lunkenheimer Company, Cincinnati, Ohio—Valves, lubricators, oil and grease cups. Represented by H. J. Evans and W. Simson.

MacLean-Fogg Lock Nut Company, Chicago—Lock nuts. Represented by J. W. Fogg and W. G. Wilcox.

Madison-Kipp Corporation, Madison, Wis.—Locomotive lubricator and fluid pressure check valve. Represented by F. R. Clark.

Miner, W. H., Inc., Chicago—Draft gears, buffers, bolster locking pin, side bearings, hand brakes and refrigerator car door fastener. Represented by B. S. Johnson, R. J. Miner, A. G. Peterson, W. E. Robertson, J. F. O'Connor and A. P. Withall.

Nathan Manufacturing Company, New York—Mechanical and hydrostatic lubricators, low water alarm, injectors, boiler checks, water column, water gages, chime whistle and boiler tester. Represented by R. Welsh, O. Best, W. R. Walsh, F. C. Davern, D. Beattie, T. J. Murphy, R. H. Jenkins, F. Marsh, W. Barr and J. A. Kelly.

National Boiler Washing Company, Chicago—Moving picture of the equipment and operation of boiler washing system. Represented by F. W. Gale.

National Malleable & Steel Castings Company, Cleveland, Ohio—Friction draft gears, radial couplers, rotary A. R. A. couplers, power hand brakes, journal boxes and parts, draft yokes, wrecking hooks, steam shovel chain, engine coupler pockets, flangeless center plates and malleable washers. Represented by G. R. Rasmussen, F. E. Moffett and F. K. Le Vake.

National Railway Devices Company, Chicago—Shoemaker radial No. 2 fire door. Represented by Jay G. Robinson, E. J. Gunnison and Steve Ord.

National Tube Company, Pittsburgh, Pa.—Galvanized scale free pipe, boiler tubes, flues and safe ends. Represented by P. J. Conrath and J. W. Kell.

New York Air Brake Company, New York—Improved steam piston and rod for cross compound air compressor, air pump strainer, super pump governor, improved dirt collector, improved brake cylinder gaskets, section U-12-B passenger car equipment. Represented by G. A. Allen, C. A. Campbell, J. D. Cartin, W. J. Elliott, C. B. Geister, George Kleifges, C. B. Lovell, C. B. Miles, L. W. Sawyer, J. L. Smith, E. F. Wentworth and H. T. Wentworth.

Oakite Products, Inc., New York—Locomotive air pumps, steam cleaning locomotives and back shop tank cleaning. Represented by L. B. Johnson, A. H. Green and D. E. Willard.

The Ohio Injector Company, Chicago—Non-lifting injectors, fire jets, low water alarm, lubricators and flange oilers and boiler check and stop valves, drifting valves, multiple container and auxiliary oil band, transfer filler, and water glass protector. Represented by N. M. Barker, A. C. Beckwith, W. H. Malone and C. G. Sauerberg.

The Okadee Company, Chicago—Pneumatic cylinder cock, front end hinge, water glass protector, blow-off valve and tender hose coupler. Represented by G. P. Dirth, C. G. Learned, A. G. Hollingshead, M. H. Oakes, I. M. Monroe, W. H. Heckman, C. W. Ploen, Chas. R. Long, Jr., and J. S. Lemley.

The Oxweld Railroad Service Company, Chicago—Welding and cutting equipment and samples of chrome plating. Represented by G. M. Crownover, Wm. Jones, A. N. Lucas and E. L. Williams.

Paige & Jones Chemical Company, New York—Boiler feed water treatment, lime and soda water softeners, wayside method of chemical treatment and Zeolite water softeners. Represented by C. B. Flint, R. Falkenburg and H. A. Brinsley.

Paxton-Mitchell Company, Omaha, Neb.—Piston rod, valve stem and air pump packing. Represented by J. L. Paxton, L. J. McConnell, H. J. Moller and I. J. Kellier.

The Pilliod Company, New York—Valve gear and mechanical back pressure control. Represented by J. H. Cooner, Frank Fisher, W. H. Bellmaine and F. H. Lutz.

Pilot Packing Company, Inc., Chicago—Various packings and drifting valves. Represented by Joseph Sinkler, L. B. Rhodes and R. N. Sinkler.

The Pyle National Company, Chicago—Locomotive electric headlights and cab fixtures, turbo-generators for locomotive and train lighting, train control and special turbine equipment, floodlighting, electric fixtures and fittings for locomotives, cars, shops and round houses and duplex locomotive distribution valves. Represented by I. W. Johnson, William Miller, J. A. Amos, Geo. E. Haas, W. A. Ross, Walter Smith, James V. Baker, R. L. Kilker, W. H. East and L. H. Steger.

Railway Engineering Equipment Co., Chicago—Special direct steaming valve manufactured for the company by the Crane Company. Represented by I. G. Plant.

Railway Journal, Chicago—Represented by E. C. Cook and J. A. Williams.

Railway Age and Railway Mechanical Engi-

neer, New York—Copies of publications and books. Represented by H. H. Morrison, H. C. Wilcox, H. E. McCandless and E. L. Woodward.

Railway Motors Corporation, DePere, Wis.—Roller journal bearing. Represented by W. S. Nordby.

Railway Purchases and Stores, Chicago—Magazine copies. Represented by Edward Wray.
Reliance Machine & Stamping Works, Inc., New Orleans, La.—High pressure grease appliance for locomotive connection rod lubrication. Represented by G. A. Pettit, E. B. Norman, H. C. Manchester and G. T. Mumford.

Royal Railway Supply Co., Inc., New York—Foundation brake gear regulators. Represented by G. M. O'Boyle, W. H. Tenvage and G. W. Bender.

Sargent Company, Chicago—Water glass protectors, 3-face water gages, 2-seat gage cocks, water columns, blower valves, water glass gaskets, steam gages. Represented by L. L. Schultz and G. S. Faber.

Wm. Sellers & Co., Incorporated, Philadelphia, Pa.—Exhaust feed-water heater injector, safety coal sprinkler and rail washer combined, non-lifting injector, improved lever operating steam valve. Represented by P. E. Raymond, J. R. New and J. D. McClintock.

Sheafe Engineering Co., Chicago—A. R. A. air hose couplings. Represented by Ralph Sheafe.

Standard Auto-Tite Joints Co., Pittsburgh, Pa.—Expansion couplings for locomotive and tender metallic pipe lines, metallic steam heat pipe lines with auto-tite flexible ball joints for passenger cars, auto flexible ball joints, rotary and expansion joints for metallic flexible pipe connection. Represented by A. M. Frankenheim and E. H. Mattingley.

Standard Oil Company (of Indiana), Chicago—No exhibit. Represented by E. F. Tegtmeier, H. D. Van Valin, C. J. Henry, F. W. Bowman, J. E. Plummer, Harry Quarum and R. T. Ronan.

Standard Oil Company (of Louisiana), New Orleans, La.—Valve oil, driving journal compound, rod cup grease and graphite, car oil, flange oil, motor oil, aviation oil, hub and center plate grease, pressure gun grease, stoker grease, coating compound, air brake compound, cleaner oil, liquid glass, pressure cup grease. Represented by W. H. Booth and R. C. Ferrell.

Standard Oil Company (of New Jersey), New York—Valve oil, car oil, flange oil, motor oil, aviation oil, cleaner oil, driving journal compound, cooling compound, air brake compound, rod cup grease, hub and center plate grease, pressure gun grease, stoker grease, pressure cup grease and liquid glass. Represented by R. A. Greene, F. C. Langdon and H. Bonham.

Standard Oil Company (of New York), New York—No exhibit. Represented by C. Grigsby and J. D. Fox.

Standard Stoker Company, Inc., New York—Working model of stokers, improved working model of slope sheet coal pusher, descriptive literature. Represented by F. P. Roesch, A. L. Whipple, R. Schlacks, H. S. Mann, C. T. Hansen, J. H. Ichter, L. F. Sweeney, H. W. Cook, C. Welker and E. T. Schroder.

Sunbeam Electric Manufacturing Company, Evansville, Ind.—Headlights, headlight turbo generator, train control turbo generator and locomotive accessories. Represented by J. H. Schroeder and C. E. Kinnaw.

Superheater Company, New York—Feedwater heater, boiler feed pumps, exhaust steam injector, remanufactured Superheater units and steam pyrometer. Represented by G. L. Bourne, F. A. Schaff, R. M. Ostermann, G. E. Ryder, H. B. Otley, C. H. True, B. Browne, C. A. Brandt, R. R. Porterfield, F. R. Fitzpatrick, N. T. McKee, G. Fogg, E. A. Averill, A. C. McLachlan, R. J. Van Meter, B. G. Lynch, C. M. Wickham, S. Macdonald, H. T. Spicer, G. L. Dolan, I. E. Mourne, K. E. Stilwell, W. G. Tawse, H. V. Jones, W. B. Grove, H. E. Brown, C. R. Fairchild, C. H. David, W. E. Libby, I. D. Toner, E. R. Stanford, W. A. Buckbee, J. F. Griffin, C. R. Hardy and J. K. Scott.

T-Z Railway Equipment Company, Chicago—Metallic piston rod and valve stem packing, front end blower nozzles and smoke preventer nozzles, boiler washout and arch tube plugs, force feed lubricator and safety blow-off valve lever lock. Represented by G. S. Turner, F. Zimmerman and F. J. Kearney.

The Texas Company, New York—Literature.
Timken Roller Bearing Company, Canton, Ohio—Journal bearings. Represented by R. M. Ross.

Union Draft Gear Company, Chicago—Friction draft gear. Represented by J. E. Tariton, O. C. Heckart, J. A. King and W. Eckels.

United States Metallic Packing Company, Philadelphia, Pa.—King type piston rod and valve stem metallic packing. Represented by J. T. Luscombe and A. E. Munch.

Universal Packing & Service Company, Chicago—Spring journal box packing. Represented by J. P. Landreth and W. H. Davis.

Vanadium Corporation of America, Niagara Falls, N. Y.—No exhibit. Represented by C. B. Woodruff.

The Swanson Company, Chicago—Locomotive gage holders. Represented by O. W. Swanson and R. V. Larson.

Vapor Car Heating Company, Inc., Chicago—Steam heat pressure regulators, stop valves, flexi-

ble metallic steam conduits, steam hose couplers and steam train line end valves. Represented by J. E. Baker, N. F. Burns, L. H. Gillick, E. C. Post and L. B. Rhodes.

Viloco Railway Equipment Company, Chicago—Improved locomotive sander, pneumatic whistle operator, exhaust pipe, floating journal bearing, rail washer, metal brake step and piston rod grease lubricator. Represented by C. H. Long, Jr., G. F. Dirth, J. M. Monroe, J. S. Lemley, A. G. Hollingshead, M. H. Oakes, C. W. Floen, W. H. Heckman and C. G. Learned.

Ward-Love Pump Corporation, Rockford, Ill.—Model of industrial zeolite water softener. Represented by T. B. Clark.

Westinghouse Air Brake Company, Pittsburgh, Pa.—Hose couplings and clamps, brake cylinder dust protector, pneumatic horn, lap joint piston packing rings for triple valves, electrically welded reservoir, improved angle cock, diaphragm type cut out cock (sectioned), dirt collector (sectioned), emergency relay valve, reinforced flanged unions, N-11-A, pedestal type brake valve, super governor, A. R. A. standard pressure retaining valve, M J A feed valve, single cast returned, compressor rings, packing cups and gaskets, Universal valve cylinder, cap with strainer and bypass, checks, packing ring indicator gages and single car testing device. Represented by C. S. Olmstead, A. K. Hohmyer, E. W. Davis, R. P. Ives, R. J. Cunningham, F. B. Johnson, A. G. Huston, H. H. Burns, H. L. Fuller, A. L. Berghane, C. J. Werlich, T. G. Myles, J. S. Y. Fralich, E. H. Weaver, J. R. Holton, L. M. Carlton and P. H. Donovan.

Whiting Corporation, Harvey, Ill.—Drop table and portable coach hoist. Represented by H. G. Buckbee and F. P. Walsh.

Woodruff Ball Joint Company, Chicago—Siphon jet, car cleaning system, metal steam heat and passenger car connectors. Represented by L. D. Woodruff.

Worthington Pump & Machinery Corporation, New York—Open type locomotive feedwater heaters. Represented by D. R. Coleman, T. C. McBride, J. F. Cosgrove, F. F. Murray, J. E. Buckingham, G. B. Bourne, T. C. McGowan and J. M. Lammedee.

Meetings and Conventions

The following list gives names of secretaries, date of next or regular meetings and places of meetings.

AIR BRAKE ASSOCIATION.—T. L. Burton, 165 Broadway, New York City. Next meeting, April 30-May 3, 1929, Stevens Hotel, Chicago. Exhibit by Air Brake Appliance Association.

AIR BRAKE APPLIANCE ASSOCIATION.—Fred Venton, Crane Company, 836 So. Michigan B'ldg., Chicago. Meets with Air Brake Association.

AMERICAN ASSOCIATION OF FREIGHT TRAFFIC OFFICERS.—J. D. Gowin, 112 W. Adams St., Chicago.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. L. Duncan, 332 S. Michigan Ave., Chicago. Next meeting, June 25, 1929, Denver, Col.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—J. Rothschild, Room 400, Union Station, St. Louis, Mo. Next annual convention, June, 1929, Mexico City.

AMERICAN ASSOCIATION OF SUPERINTENDENTS OF DINING CARS.—L. M. Jones, Supt. of Sleeping and Dining Cars, C. M. St. P. & P. Chicago. Annual meeting, October 24-25, 1928, Stevens Hotel, Chicago.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—J. W. Welsh, 292 Madison Ave., New York.

AMERICAN RAILROAD MASTER TINNERS' COPPER-SMITHS' AND PIPE FITTERS' ASSOCIATION.—C. Borchardt, 202 North Hamlin Ave., Chicago.

AMERICAN RAILWAY ASSOCIATION.—H. J. Forster, 30 Vesey St., New York, N. Y. Division I.—Operating.—J. C. Caviston, 30 Vesey St., New York, N. Y. Freight Station Section.—R. O. Wells, Freight Agent, Illinois Central Railroad, Chicago.

Medical and Surgical Section.—J. C. Caviston, 30 Vesey St., New York.

Protective Section.—J. C. Caviston, 30 Vesey St., New York.

Safety Section.—J. C. Caviston, 30 Vesey St., New York. Annual meeting April 23-25, 1929, Indianapolis, Ind.

Telegraph and Telephone Section.—W. A. Fairbanks, 30 Vesey St., New York. Next convention, Sept. 10-12, 1929, St. Paul, Minn.

Division II.—G. W. Covert, 431 South Dearborn St., Chicago.

Division III.—Traffic. J. Gottschalk, 143 Liberty St., New York.

Division IV.—Engineering. E. H. Fritch, 431 South Dearborn St., Chicago, Ill.

Annual convention, March 5-7, 1929, Chicago. Exhibit by National Railway Appliances Association.

Construction and Maintenance Section.—E. H. Fritch.

Electrical Section.—E. H. Fritch. Signal Section.—H. S. Balliet, 30 Vesey St., New York.

Division V.—Mechanical.—V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill. Exhibit by Railway Supply Manufacturers' Association.

Equipment Painting Section.—V. R. Hawthorne, 431 South Dearborn St., Chicago. Annual meeting, 1929, Kansas City.

Division VI.—Purchases and Stores.—W. J. Farrell, 30 Vesey St., New York, N. Y.

Division VII.—Freight Claims.—Lewis Pilcher, 431 South Dearborn St., Chicago, Ill. Annual meeting, 1929, Washington, D. C.

Division VIII.—Motor Transport.—George M. Campbell, American Railway Association, 30 Vesey St., New York, N. Y.

Car Service Division.—C. A. Buch, 17th and H Sts., N. W., Washington, D. C.

AMERICAN RAILROAD BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. Ry., 319 N. Waller Ave., Chicago. Annual convention, Oct. 23-25, 1928, Statler Hotel, Boston. Exhibit by Bridge and Building Supply Men's Association.

AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.—R. G. East, Agricultural Agent, Pennsylvania Railroad, Shelbyville, Ind. Semi-annual meeting, December 6-7, 1928, Congress Hotel, Chicago. Annual meeting, May 22-24, 1929, Houston, Tex.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—(Works in co-operation with the American Railway Association, Division IV). E. H. Fritch, 431 South Dearborn St., Chicago. Annual convention, March 5-7, 1929, Chicago. Exhibit by National Railway Appliances Association.

AMERICAN RAILWAY MAGAZINE EDITORS' ASSOCIATION.—Miss Page Nelson Price, Norfolk & Western Magazine, Roanoke, Va.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—G. G. Macina, C. M. & St. P. Ry., 11402 Calumet Ave., Chicago. Exhibit by Supply Association of the American Railway Tool Foremen's Association.—Secretary: E. H. Lunde, Federal Machinery Sales Co., Chicago.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—T. F. Whittlesey, Union Trust Bldg., Washington, D. C.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York. Railroad Division, Marion B. Richardson, 30 Church St., New York.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—H. L. Dawson, 228 N. La Salle St., Chicago. Annual meeting, January 22, 1929, Louisville, Ky.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—H. D. Morris, District Claim Agent, Northern Pacific Ry., St. Paul, Minn. Next meeting, June 19-21, 1929, Detroit, Mich.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., Room 413, C. & N. W. Station, Chicago. Annual convention, Oct. 23-26, Hotel Sherman, Chicago. Exhibit by Railway Electrical Supply Manufacturers' Association.

ASSOCIATION OF RAILWAY EXECUTIVES.—Stanley J. Strong, 17th and H Sts., N. W., Washington, D. C.

ASSOCIATION OF RAILWAY SUPPLY MEN.—E. H. Weaver, Westinghouse Air Brake Co., 80 E. Jackson Blvd., Chicago. Meets with International Railway General Foremen's Association.

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—W. D. Waugh, Detroit Graphite Co., St. Louis, Mo. Annual exhibit at convention of American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—C. R. Crook, 129 Chaston St., Montreal, Que.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 626 North Pine Ave., Chicago. Regular meetings, 2nd Monday in month, except June, July and August, Great Northern Hotel, Chicago.

CAR FOREMEN'S ASSOCIATION OF LOS ANGELES.—J. W. Krause, 514 East Eighth St., Los Angeles, Calif. Regular meetings, second Friday of each month, 514 East Eighth St., Los Angeles.

CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, MO.—A. J. Walsh, 5874 Plymouth, Apt. 18, St. Louis, Mo. Meetings, first Tuesday of each month, except July and August, Broadview Hotel, East St. Louis, Ill.

CENTRAL RAILWAY CLUB.—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings, 2nd Thursday each month, except June, July, August, Hotel Statler, Buffalo, N. Y.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S ASSOCIATION.—(See Master Car Builders' and Supervisors' Association.)

CINCINNATI RAILWAY CLUB.—D. R. Boyd, 811 Union Central Bldg., Cincinnati, Ohio. Meetings, 2nd Tuesday in February, May, September and November.

CLEVELAND RAILWAY CLUB.—F. L. Frericks, 14416 Alder Ave., Cleveland, Ohio. Meetings, first Monday each month, except July, August, September, Hotel Hollenden, Cleveland.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R. Detroit, Mich. Exhibit by International Railroad Master Blacksmiths' Supply Men's Association.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS'

SUPPLY MEN'S ASSOCIATION.—W. W. Criley, Ajax Mfg. Co., Cleveland, O.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—L. G. Plant, 80 E. Jackson Blvd., Chicago. Next meeting, May 7-10, 1929, Hotel Sherman, Chicago. Exhibit by International Railway Supply Men's Association.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabash Ave., Winona, Minn.

INTERNATIONAL RAILWAY SUPPLY MEN'S ASSOCIATION.—S. A. Wirt, Detroit Lubricator Co., 820 S. Michigan Blvd., Chicago. Meets with International Railway Fuel Association.

MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 26 Cortlandt St., New York. Annual meeting, May 21-24, 1929, Hotel Biltmore, Atlanta, Ga.

MASTER CAR BUILDERS' AND SUPERVISORS' ASSOCIATION.—A. S. Sternberg, Belt Ry. of Chicago, Polk and Dearborn Sts., Chicago.

NATIONAL ASSOCIATION OF RAILROAD TIE PRODUCERS.—Roy M. Edmonds, 1252 Syndicate Trust Bldg., St. Louis, Mo.

NATIONAL ASSOCIATION OF RAILROAD AND UTILITIES COMMISSIONERS.—James B. Walker, 270 Madison Ave., New York. Annual convention, November 13-16, New Orleans, La.

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. W. Kelly, 1014 South Michigan Ave., Chicago. Exhibit at A. R. E. A. convention.

NATIONAL SAFETY COUNCIL.—Steam Railroad Section: C. F. Larson, supt. of safety, Missouri Pacific, St. Louis, Mo.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings 2nd Tuesday in month, excepting June, July, August and September, Copley Plaza Hotel, Boston, Mass.

NEW YORK RAILROAD CLUB.—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings, 3rd Friday in month, except June, July, and August.

PACIFIC RAILWAY CLUB.—W. S. Wollner, 64 Fine St., San Francisco, Cal. Regular meetings 2nd Tuesday in month, alternately in San Francisco and Oakland.

RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.—E. R. Woodson, 1116 Woodward Building, Washington, D. C. Annual meeting, Cleveland, O.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Naxon, 1406 Packard Bldg., Philadelphia, Pa. Annual meeting, November, 1928, Hotel Commodore, New York.

RAILWAY CAR DEPARTMENT OFFICERS' ASSOCIATION.—(See Master Car Builders' and Supervisors' Association.)

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 515 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in each month, except June, July and August, Fort Pitt Hotel, Pittsburgh, Pa.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—Edward Wray, 9 St. Clinton St., Chicago. Meets with Association of Railway Electrical Engineers.

RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.—F. W. Venton, Crane Co., 836 S. Michigan Ave., Chicago. Meets with Traveling Engineers' Association.

RAILWAY FIRE PROTECTION ASSOCIATION.—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md. Next convention, Oct. 9-11, 1928, Hotel Gibson, Cincinnati, O.

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa. Meets with Mechanical Division and Purchases and Stores Division, American Railway Association.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, 30 Church St., New York. Meets with Telegraph and Telephone Section of A. R. A. Division I.

RAILWAY TREASURY OFFICERS ASSOCIATION.—L. W. Cox, 1217 Commercial Trust Bldg., Philadelphia, Pa. Annual meeting, October 11-13, Atlanta-Biltmore Hotel, Atlanta, Ga.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—T. F. Donahoe, Gen. Suprv. Road, Baltimore & Ohio, Pittsburgh, Pa. Exhibit by Track Supply Association.

Next convention, Sept. 19-21, 1929, Chicago.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings 2nd Friday in month, except June, July and August.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmonds, West Nyack (Rockland Co.), N. Y. Meets with A. R. A. Signal Section.

SOUTHEASTERN CARMEN'S INTERCHANGE ASSOCIATION.—Clyde Kimball, Inman Shops, Atlanta, Ga. Meets semi-annually.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. T. Miller, P. O. Box 1205, Atlanta, Ga. Regular meetings, 3rd Thursday in January, March, May, July, September and November, Ansley Hotel, Atlanta.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—R. G. Parks, A. B. & A. Ry., Atlanta, Ga.

TRACK SUPPLY ASSOCIATION.—L. C. Ryan, Ox-weld Railroad Service Co., 80 E. Jackson Blvd., Chicago. Meets with Roadmasters' and Maintenance of Way Association.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, Gen. Supt. R. S., New York Central, Buffalo, N. Y. Exhibit by Railway Equipment Manufacturers' Association.

WESTERN RAILWAY CLUB.—W. J. Dickinson, 189 West Madison St., Chicago. Regular meetings, 3rd Monday each month, except June, July and August.

Traffic

The New York Central has amplified its passenger service between Chicago and Cleveland by the addition of a coach and a parlor car to its fast mail train which leaves Chicago at 9:50 a. m. and arrives in Cleveland at 5:45 p. m.

The Chicago, Rock Island & Pacific has reduced the running time of the Iowa-Nebraska Limited between Chicago and Omaha, 32 min. Under the new schedule the train leaves Chicago at 6:05 p. m. instead of 5:33 p. m. and arrives in Omaha at 7:45 a. m. as previously.

Beginning with the fall timetable on Sunday, September 30, the Pennsylvania began the operation of electric trains in local passenger service between Philadelphia, Pa., and Wilmington, Del., 27 miles. The operation of electric trains on the Octoraro branch is expected to begin within four or five weeks.

The Cleveland, Cincinnati, Chicago & St. Louis has reduced the running time of its Royal Palm between Chicago and Jacksonville, Fla., 55 min. Under the new schedule the train leaves Chicago at 10:10 p. m. instead of 9:15 p. m. and arrives in Jacksonville at 7:20 a. m. as previously.

The Union Pacific announces that the North Platte cut-off which extends from Egbert, Wyo., on the main line, 32 miles east of Cheyenne, northward, 63 miles, to Yoder, Wyo., has been completed and is now open for freight service; and that regular passenger train service will be established shortly.

"Railroad Dollar Day" is announced by the Boston & Maine. For the Columbus Day week-end, October 12, 13 and 14, round-trip tickets will be sold between any two points on the Boston & Maine for the one-way fare plus one dollar; children under 12 years, half-fare plus fifty cents. The return trip must be begun before midnight on Sunday, the 14th.

The Interstate Commerce Commission has suspended from September 30 until April 30, 1929, the operation of tariff schedules proposing to establish minimum class rates subject to the Official Classification ratings for application between points in Official Classification territory and points in Southern Classification territory in connection with new through interterritorial class rates published pursuant to the commission's findings in the Southern class rate investigation case.

The St. Louis-San Francisco has reduced the running time of its Ozark Limited which operates between St. Louis, Mo., and Dallas, Tex., one hour and ten minutes between St. Louis and Springfield, Mo. The train now leaves St. Louis at 9:30 a. m. instead of 8:20 a. m. and arrives in Springfield at 4:30 p. m. as previously. Local service between these points has been increased

by the addition of a new train which leaves St. Louis at 7:50 a. m. and arrives in Springfield at 3 p. m. Eastbound the new train leaves Springfield at 11:30 a. m. and arrives at St. Louis at 6:30 p. m.

Procedure under the Barge Line Act passed by the last Congress, pertaining to the establishment of joint through routes and rates and divisions between rail carriers and barge lines will be considered at a hearing scheduled for October 12 at Washington by the Interstate Commerce Commission. The Commission has announced that it desires to obtain the views of all interested parties with respect to the meaning and purpose of the provisions of Section 2, paragraph *e* of the new law and also with respect to the procedure which should be followed by the Commission with reference particularly to the extent of public hearings required. Printed statements covering the same subject matter may be filed within 10 days after the hearing.

The second annual International Travel Exposition will be held at the Hotel Sherman, Chicago, on November 11 to 18 when 20 foreign governments, 11 states in the United States, travel bureaus, steamship lines and other travel interests will exhibit art objects, craftsmanship, curios, trophies, etc. The foreign governments include Austria, Belgium, Cuba, Denmark, France, Germany, Greece, Hungary, Jugo-Slavia, Mexico, Netherlands, Norway, Ontario, Quebec, Switzerland, Poland, Japan, Czecho-Slovakia, Lithuania, and Italy. The states include Illinois, Florida, New Mexico, Alabama, Utah, Wyoming, Oregon, Arkansas, Oklahoma, Nevada and California. An educational program with picturesque features and with speakers of international note will be conducted in conjunction with the exhibits. The Association of American Bank Travel Bureaus will hold its annual meeting concurrent with the exposition.

Regional Advisory Board Meetings in October

The following regional advisory boards will hold meetings in October: the Great Lakes Regional Advisory Board on October 3 at Cleveland, Ohio; the Atlantic State Shipper's Advisory Board on October 4 at Wilmington, Del.; the Midwest Shippers' Advisory Board on October 10 at Springfield, Ill.; and the Northwest Shippers' Advisory Board on October 16 at Duluth, Minn.

Central of Georgia Volunteer Solicitors

Organizations of employees for the purpose of soliciting freight and passengers and for promoting the business of their employees, wherever practicable, constitute the subject of the latest circular issued by J. J. Pelley, president of the Central of Georgia. Associations of employees are to be found on each of the five divisions of this road, some of them for the promotion of economy in fuel, some for safety, and some other ob-

jects. Organizations for solicitation of freight and passengers are now functioning at Cedartown, Cuthbert, Griffin, Dothan, Albany, Macon, Union Springs, Atlanta, Chattanooga, Birmingham, Columbus, Augusta, Americus, Griffin, Troy, Fort Valley, Eufaula, Athens and Savannah.

Canadian Express Companies Denied Interim Rate Increases

Announcement was made last week at Ottawa by H. A. McKeown, chairman of the Dominion Railway Board, that that body had decided to refuse the request of the railway express companies of Canada for an interim increase of 10 per cent. in rates on all traffic, other than cream, carried at commodity rates. This request, made by the Express Traffic Association of Canada through F. H. Phippen, of Toronto, was made pending a decision of the Board as a result of the express rates case hearing of 1923-24. Owing to a number of developments no judgment was rendered after that hearing. It is held by the Railway Board that conditions have altered considerably since that time and that it will be imperative to hold another hearing. It does not, however, believe the express companies are entitled to any interim or emergency increase.

I. C. C. Upholds Unpublished Terminal Charges

Proving simply that charges for transportation or services in connection therewith, not published or filed in accordance with requirements of Section 6 of the Interstate Commerce Act, have been collected by a common carrier subject to the Act is not equivalent to proving that the shipper is entitled to reparation. Such is the decision of the Interstate Commerce Commission in a proceeding on complaint of the Southern Transportation Company, which alleged that charges exacted by the Norfolk & Western and other defendant carriers for terminal services incident to the transfer of coal from cars to vessels at Hampton Roads were unreasonable and unlawful and that some of the charges were not included in any tariffs published or filed by the defendants. The Commission held that a charge of \$11 to operators of vessels engaged in coastwise service and a charge of \$30 to operators of vessels engaged in foreign commerce were not shown to be unreasonable.

New England Shippers' Board

The tenth regular meeting of the New England Shippers' Advisory Board was held at Bridgeport, Conn., on September 21, with an attendance of about 350. Many of the increases in traffic as shown by the estimates of expected volume of freight for the next three months, as reported by the committees, were more than 10 per cent. Twenty-three committees, altogether, reported anticipated increases. The increases of 10 per cent or more were: automobiles 10 to 12; brass, bronze and copper, 10; boots and shoes, 10; cement, 10; coal and coke, 10 to 15;

hides and leather, 10; iron and steel, 5 to 10; machinery, 10 to 15; paper and pulp, 5 to 10; petroleum, 15; scrap metals, 30; slate, 10; wire goods, 5 to 10.

Decreases are expected in brick 15 per cent; furniture, 10; grains, 10; hay, 50; lime, 10.

Current business conditions in four states were summarized by H. A. Seeper, New Hampshire; F. H. Payne, Massachusetts, R. B. Watrous, Rhode Island, and E. Kent, Connecticut.

District manager Randall reported that for the first 34 weeks of 1928, the decrease in the number of cars loaded in New England as compared with last year was 1.6 per cent, (while the decrease in the country as a whole was about four per cent).

The next meeting is to be held in Boston next March.

Southwest Shippers' Board

The commodity committee report presented at the nineteenth regular meeting of the Southwest Shippers' Advisory Board at Dallas, Texas on September 27 reflected a high degree of optimism concerning prospective business in this territory. The only commodity of which shipments are expected to be less during the fourth quarter of the year is potatoes.

Shipments of commodities in which increases are expected over a year ago are: grain, 85 per cent; flour, meal and other mill products, 10 per cent; cotton, 30 per cent; citrus fruits 30 per cent; other fresh fruits, 20 per cent; fresh vegetables, except potatoes, 5 per cent; livestock, 5 per cent; coal, coke and lignite, 5 per cent; lumber and forest products, 10 per cent; petroleum and petroleum products, 5 per cent; iron and steel, 5 per cent; castings, machinery and boilers, 5 per cent; cement, 5 per cent; brick and clay products, 15 per cent; sugar and molasses, 20 per cent; agricultural implements and vehicles, 10 per cent, automobiles and trucks, 30 per cent and canned goods, 5 per cent.

Commodities, the shipments of which are expected to approximate those of last year, are: hay, cottonseed products except cottonseed oil, ore and concentrates, clay, gravel, sand and stone, lime and plaster, fertilizer, paper products and chemicals and explosives.

The Panama Canal and Its Ports

The Board of Engineers for Rivers and Harbors of the War Department in cooperation with the Bureau of Operations, United States Shipping Board, has just issued a report on "The Panama Canal and its Ports," constituting No. 22 of a series of reports on the ports of the United States and its possessions.

The report contains information regarding the canal itself, the charges, rules and regulations applicable thereto, as well as the facilities, services and charges applicable at the ports located at the Atlantic and Pacific entrances.

The report states that the traffic through the canal has greatly exceeded the estimates made before the canal was opened. During the war period, little headway was made in the development of

traffic, but since the war the growth has been marked. The commerce has increased from 10,884,830 tons in 1922 to 26,037,447 tons in 1926. While the early increases were due to large shipments of oil from the Pacific Coast to the Atlantic Coast, the decline in this business has been made up by the increase in other traffic, including particularly lumber, ore, nitrates, and general merchandise.

A detailed study of the commerce of Cristobal and Balboa with the United States for the fiscal year ended June 30, 1926, shows that the total traffic, between the port of Cristobal and the United States during that year amounted to 1,033,909 long tons, of which 883,759 long tons were imports and 150,150 tons were exports. The traffic of Balboa with the United States amounted to 428,828 long tons, of which 420,384 tons were imports from the United States and 8,440 tons exports to the United States. The report shows by states the origin of the imports and destination of the exports of these ports.

Traffic Club of Chicago Condemns Political Rate Making

Political rate-making and other forms of political interference were condemned by the Traffic Club of Chicago on September 27, when that body approved a resolution adopted by the Associated Traffic Clubs of America at its annual meeting at San Francisco on June 12 and 13. The club is in accordance with the by-laws of the Associated Traffic Clubs provide that all member clubs shall consider any action started by the Association before said action becomes the expression of the 50 clubs which comprise the Association. The resolution sets forth the seriousness and harmfulness of political rate-making and cites the refusal of the United States Senate to confirm the reappointment of John J. Esch to the Interstate Commerce Commission; the recent action of the Senate calling for grain and live stock rates on a par with rates on the same commodities in Canada, and other similar actions. The resolution is to the effect that "the Associated Traffic Clubs of America declare for a return to the policy of interstate commerce regulation by and through the Interstate Commerce Commission, to be composed of men chosen for their duties because of their qualifications. In the general discussion preceding the approval of the resolution by the Chicago Club, J. P. Haynes, executive vice president of the Chicago Association of Commerce, described instances of political rate-making, dwelling at length upon the origin of the Hoch-Smith resolution. Murray N. Billings, traffic manager of the Illinois Steel Company, emphasized the uselessness of the Hoch-Smith resolution by calling attention to the fact that 60,000 pages of transcript and 2,000 exhibits have already been compiled at the hearings thus far held and that it is impossible for any member of the Commission to digest the testimony intelligently before making a decision.

Equipment and Supplies

Locomotives

THE DELAWARE, LACKAWANNA & WESTERN is inquiring for 20 locomotives of the 4-8-4 type, for main line fast freight service.

THE DONNER STEEL COMPANY, Buffalo, N. Y. has ordered three 300 hp. oil electric locomotives, to be manufactured jointly by the Ingersoll-Rand Company, the General Electric Company and the American Locomotive Company.

Freight Cars

THE CHICAGO, BURLINGTON & QUINCY is rebuilding 498 composite gondola cars at its Galesburg shops.

THE SOUTH AFRICAN RAILWAYS have ordered 400 gondola cars from the Leeds Forge Company, Ltd., Leeds, England. Inquiry for this equipment was reported in the *Railway Age* of June 16.

Passenger Cars

THE DELAWARE, LACKAWANNA & WESTERN is inquiring for 2 steel dining cars

Iron and Steel

THE VIRGINIAN is inquiring for 400 tons of steel for various bridges.

THE PENNSYLVANIA is asking bids on 260,000 tons of steel rail for delivery in 1929.

THE NEW YORK CENTRAL has authorized the purchase of its steel rail requirements for 1929.

THE SOUTHERN has ordered 200 tons of steel for a bridge, from the American Bridge Company.

THE NEW YORK CENTRAL has ordered 250 tons of steel for a bridge at Dover Plains, N. Y.

THE TOLEDO TERMINAL RAILROAD COMPANY has ordered 4,500 tons of structural steel for a lift bridge at Toledo, Ohio, from the American Bridge Company.

Signaling

THE ST. LOUIS-SAN FRANCISCO has ordered from the Union Switch & Signal Company, a mechanical interlocking for Nettleton, Ark., 18 working levers.

THE BALTIMORE & OHIO, in connection with the installation of automatic block signals on its line between Grafton, W. Va., and Parkersburg, 103 miles, is also installing remote power switches at 15 locations; and has given the Union Switch & Signal Company an order for twelve-lever table interlocking machines for 1' of these stations, and eight-lever tables for the other four; and for 56 low-voltage switch movements.

Supply Trade

H. W. Bonnell has been placed in charge of sales for the **Northern Conveyor and Manufacturing Company**, Janesville, Wis.

L. R. Beatty has been appointed representative of the **Northwest Engineering Company** with headquarters at Philadelphia, Pa.

George S. Jones, assistant manager of the bar and specialty division of the **Republic Iron & Steel Company**, Youngstown, Ohio, has been appointed district sales manager.

J. C. Bloomfield, district manager of the **Industrial Works**, Bay City, Mich., has resigned to become manager in charge of railway sales for the **Harnischfeger Sales Corporation**, Milwaukee, Wis.

Alonzo F. Allen, secretary and assistant treasurer of the **American Steel & Wire Company**, at Cleveland, Ohio, has been made treasurer in addition to his secretarial duties succeeding **J. R. Thomas**, retired.

A. H. Tischer has been appointed representative of the **Foots Bros. Gear & Machine Company**, Chicago, to handle the Indiana territory south of a line drawn below Fort Wayne, and also including Louisville, Ky.

The **Vanadium Corporation of America**, New York, has opened an office in the Henry W. Oliver building, Pittsburgh, Pa. under the direction of **J. Alfred Miller, Jr.**, general manager of sales.

C. H. George, general traffic manager of the **New Jersey Zinc Company** and its subsidiaries, at New York, has been promoted to manager of its patent division; **W. A. Moore**, traffic manager, has been appointed general traffic manager to succeed Mr. George; **K. L. R. Baird** succeeds Mr. Moore as traffic manager.

The **International Oxygen Company**, Newark, N. J., has taken over the business of the **Tariffville Oxygen & Chemical Company**, Tariffville, Conn. This plant, will in the future be conducted by a newly formed company, the **Tariffville Oxygen Company**, as the New England division of the **International Oxygen Company**.

R. W. Piper, formerly representative of the **Pittsburgh Transformer Company**, has been appointed representative of the southeast district, including a section of West Virginia and the states of Virginia, North Carolina, South Carolina, Alabama and Florida, for the **Wagner Electric Corporation**, St. Louis, Mo. **H. D. Epting**, representative at

Philadelphia, Pa., has been transferred to Atlanta, Ga.

H. K. Williams for the past twelve years in the sales department at New York, of the **Safety Car Heating and Lighting Company**, has been appointed manager of the equipment department, with headquarters at 75 West street, New York City. Mr. Williams is in charge of sales of axle lighting equipment, batteries and accessories. **L. Schepmoes**, manager of sales service department, at New Haven, Conn., has been appointed manager of the fixture department, with headquarters at New Haven, in charge of sales of lighting fixtures, fans and similar materials.

Joseph T. Ryerson & Son, Inc., Chicago, has acquired the plant, merchandise, and good will of the **E. P. Sanderson Company**, at Cambridge, Mass. The Ryerson Company, steel-service organization was founded in 1842, and has plants in Boston, New York, Buffalo, Detroit, Cincinnati Cleveland, Chicago and St. Louis. It has been operating on leased property at Cambridge, since May, 1926. The new property will give it a large increase in plant facilities and tonnage. By the combination of the Ryerson-Sanderson organizations and the addition of new lines, the Ryerson Company will be in a much better position to give improved service. The Sanderson plant is said to be the largest and most complete of its kind in the New England territory.

L. C. Wilson, formerly president of the **Federal Malleable Company**, Milwaukee, Wis., has been appointed assistant to the president of the **Interstate Iron & Steel Company**. After graduating from the **Sheffield Scientific School** of **Yale University** in 1907, he became connected with the sales department of the **Harbison-Walker Refractories Company** and represented that company for several years in the Pittsburgh, Pa., Chicago, New York and New Haven, Conn., districts. Subsequently he joined the **Chain Belt Company** of Milwaukee as assistant to the vice-president, later being promoted to general sales manager. He entered the employ of the **Federal Malleable Company** as secretary, later becoming vice-president and general manager, and then president, which position he has held until his recent appointment.

William F. Bossert, president of the **Signal Accessories Corporation**, Utica, N. Y., is now chairman of the board; **Mark R. Briney**, vice-president is president and general manager and **W. H. Roberts**, secretary and treasurer, all with headquarters at Utica where the main office and factory are located. The **Brinard Sales & Construction Co., Inc.**, with main office in New York, who are the general agents of the **Signal Accessories Corporation** will continue to act in that capacity, combining on November 1, its officer with that of the **Signal Accessories Corporation**, at Utica. The western office of the **Signal Accessories**

Corporation will continue at 713 Marquette building, Chicago, the **A. & H. Corporation** acting as its western agents.

H. E. Chilcoat has been appointed manager of sales of the air dump car division of the **Koppel Industrial Car & Equipment Company**, with headquarters at Pittsburgh, Pa. He was born in Obisbonia, Pa., and entered railroad service in 1900 as a machinist's helper on the Pennsylvania at Pittsburgh. He served successively as work inspector, gang foreman and foreman of the air brake department until 1906 when he



H. E. Chilcoat

resigned to enter the employ of the **Westinghouse Air Brake Company** as traveling inspector with headquarters at Richmond, Va. Subsequently, he was transferred to the sales department of that company at Pittsburgh and continued in sales work until 1918 when he resigned to become manager of the **Clark Car Company**. In 1926 he severed this connection and for the past two and one half years has been engaged in consulting commercial engineering work.

P. A. Terrell, formerly manager of the **New Industries** division of the



P. A. Terrell

Mississippi Power Company, has been placed in charge of central station and railroad sales of the **Copperweld Steel**

Company, Chicago. He graduated from Alabama Polytechnic Institute in 1917 and spent the following nine months on the General Electric test course at Schenectady, N. Y. He served as a lieutenant in Company 158 of the first regiment of the United States Marine Corps, seeing active service in Cuba and Haiti. Following his military service he was employed by the Alabama Power Company in the line and substation maintenance department, becoming assistant superintendent of the West division in 1920. In 1921 he was promoted to superintendent of the Gadsden district and became district manager of the Jasper district in 1922. He resigned from this position in May, 1927, to become manager of the New Industries division of the Mississippi Power Company, which position he has held until his recent appointment.

Obituary

Henry C. Buhoup, second vice-president of the Chicago Railway Equipment Company from 1899 to 1905 and representative of the McConway & Torley Company, Pittsburgh, Pa., from 1882 to 1921, with headquarters at Chicago, died at Pasadena, Cal., on September 29. He was born at Pittsburgh, Pa., on May 6, 1845. In 1886 he became one of the organizers of the National Hollow Brake Beam Company, which later became the Chicago Railway Equipment Company and during his connection with the latter company was in charge of sales.

Trade Publication

THE GENERAL AMERICAN CAR COMPANY has issued a 50-page illustrated booklet entitled "The Modern Transportation of Dairy Products," in which are described the construction and use of glass-lined refrigerator milk cars. A list of the users of these cars and their comments also are included.

A DEFICIT OF 253,000,000 FRANCS OF about \$10,120,000 was reported by the five French railway companies and the two government systems for the year 1927. This compares with a 1926 surplus of 577,000,000 francs or approximately \$23,080,000, although deficits were reported for each of the five years, prior to 1926, following the entry into operation under the Railroad Act. The net deficit for the five companies amounted to 14,400,000 francs (\$576,000) while that from operations of the two government properties amounted to 238,800,000 francs or about \$9,552,000. Profits totalling 142,700,000 francs were reported by three of the companies while a combined deficit of 157,100,000 was reported by the other two. The State lines reported a deficit of 270,400,000 francs while the other government property, the Alsace-Lorraine, earned 31,600,000 francs.

Construction

ATCHISON, TOPEKA & SANTA FE.—Bids were closed by this road on October 4, for the construction of a two story office building which will serve as divisional headquarters at Wellington Kan. The building will be constructed of reinforced concrete and stone.

ATCHISON, TOPEKA & SANTA FE.—The Interstate Commerce Commission has made public a proposed report by Examiner H. C. Davis recommending that the commission grant the application of the Cane Belt, a subsidiary of the Santa Fe, for a certificate authorizing the construction of a line of 35 miles from a point on its Lane City-Magnet line to a connection with the Gulf, Colorado & Santa Fe near Thompsons, Tex. The examiner recommends denial of the application of the St. Louis, Brownsville & Mexico for authority to construct extensions from a point between Brazoria and Allenhurst northwest to the boundary line between Fort Bend and Wharton counties, 25 miles, and from a point near Alcoa northwest to Dickinson, 9 miles. The immediate occasion for both applications, the report says, is the expected development of a large sulphur mine at Boling Dome, now served only by a spur of the Southern Pacific, but the Santa Fe project would also serve as a cut-off between points on the Cane Belt and Galveston. Mr. Davis expresses the opinion that no need for a third line to Boling Dome is shown and that to build such a line would be wasteful competition.

BALTIMORE & OHIO.—A contract for construction of approaches to a viaduct over the tracks of this company on the Dunes highway at Miller, Ind., has been let to John C. Sunderman, Gary, Ind. Bids will close on October 11 for the construction of the viaduct proper. The cost of the project, 65 per cent of which will be paid by the railroad, will be about \$150,000.

CHESAPEAKE & OHIO.—A contract for the construction of a water treating plant at Lake Bruce, Ind., has been let to the Bickelhoff Construction Company, Richmond, Va.

CHESAPEAKE & OHIO.—A contract has been let to the Roberts & Schaefer Company, Chicago, for the rehabilitation of a coaling station at Handley, W. Va.

CHICAGO, ROCK ISLAND & PACIFIC.—A contract has been awarded to the T. S. Leake Construction Company, Chicago, for the construction of a brick and stucco passenger station at Seminole, Okla., which will involve an expenditure of about \$20,000.

CLEVELAND UNION TERMINALS.—This company is receiving bids for the erection of a bridge over Canal Street, Cleveland, Ohio.

NEW YORK CENTRAL.—This road has given contracts for improvements as follows: For alterations and additions to engine house at Rensselaer, N. Y., to the Walsh Construction Company, Syracuse; modification of express company's platform, Grand Central Terminal, N. Y., to the Ruggles-Robinson Company, New York; enlargement of classification yard and extension of bridge 591 at De Witt, Syracuse, N. Y., Walsh Construction Company, Syracuse, N. Y.; extension of platform canopies, and fences at Marble Hill, Greystone, Hastings, Dobbs Ferry, Ardsley and Irvington, N. Y., to the Edward J. Duffy Company, Inc., N. Y.

DELAWARE, LACKAWANNA & WESTERN.—This company has purchased fifteen acres of ground in north Jersey City on which it will erect a dry storage warehouse to be devoted to general storage, warehouse and distribution purposes. The main building will be 848 ft. by 162 ft., of steel, concrete and brick construction. The first and second floors will contain l.c.l. freight stations while all other floors will be used for warehouse, storage, manufacturing and assembling purposes. Extensive l.c.l. freight and warehouse delivery platforms, provided with tail-board space sufficient to accommodate 113 vehicles at one time, all under cover and entirely clear of city street areas, will be provided at street level. The warehouse portion of the building will be served at the second floor level by tracks having a total capacity of 52 cars, while tracks having a capacity of 70 cars will serve the l.c.l. freight station from the opposite side of the building. Incorporated in the plans for this development are enlargement and re-arrangement of the adjacent team-track yards of the road, along with an extension of the wharfage space for the accommodation of marine equipment handling both harbor and export and import traffic and the facilities for direct loading from car to steamer and vice versa. The road's contemplation of this project was reported in the *Railway Age* issue of July 28.

ERIE.—This road has awarded a contract to Swingle & Robinson, Columbus, Ohio, for work in connection with the elimination of two grade crossings at Youngstown, Ohio. The call for bids on this work was reported in the *Railway Age* of September 8.

ERIE.—This road plans the construction of a second freight track along its existing line on Eleventh Street, Jersey City, N. J.

GRAND TRUNK WESTERN.—A contract for the construction of a bridge over the St. Joseph river at South Bend, Ind. has been let to Foley Bros., St. Paul, Minn. The bridge will also span Lincoln highway and the East and North Shore boulevard. This contract also covers the construction of an arch bridge over Mishawaka avenue in South Bend. All of this work is part of a diversion program which will remove the Grand Trunk tracks from Division street in South Bend while the railroad will gain entrance to the new union station over the New York Central track elevation. A contract for the con-

struction of a portion of the belt line at Pontiac, Mich., has been awarded to the Jones Contracting Company, Cleveland, Ohio.

GREAT NORTHERN.—This company has announced plans for the immediate construction of a two story office building at Fourth avenue and Union street, Seattle, Wash., which will serve as a ticket office and provide headquarters for traffic officers. It is expected that this building which will have outside dimensions of 55 ft. by 111 ft. and will be the first unit of a larger building which will eventually become permanent Great Northern headquarters in Seattle. A contract has been let to W. T. Butler, Seattle, for the construction of an addition to the terminal post office building at Spokane, Wash., which is owned by the railroad and used by the post office department. The addition will include two one-story units having dimensions of 20 ft. by 40 ft. and 40 ft. by 40 ft. respectively and a canopy and platform 130 ft. long.

MEMPHIS & ARKANSAS RAILWAY BRIDGE & TERMINAL COMPANY.—A contract for the rebuilding of the Harahan bridge over the Mississippi river at Memphis, Tenn., which was damaged by fire on September 17, has been let to the American Bridge Company, Chicago.

MICHIGAN CENTRAL.—Tentative plans have been announced for the use of the right of way of this company for a track elevation project at Hammond, Ind., which will involve the use of the elevated structure by all railroads now running through that city. The Michigan Central is located in an east-west direction and it is planned to have the railroads running from northwest to southeast use the new structure through the business district. The total cost of the project, including the construction of a union station at State and Hohman streets, is expected to be about \$8,000,000, with the city paying 75 per cent of the cost under the present state law and the railroads 25 per cent. Railroads now operating within the city limits of Hammond, besides the Michigan Central, are the Baltimore & Ohio Chicago Terminal, the Chesapeake & Ohio, the Chicago, Indianapolis & Louisville, the Elgin, Joliet & Eastern, the Erie, the Indiana Harbor Belt, the New York Central, the New York, Chicago & St. Louis, the Pennsylvania, the Chicago, South Shore & South Bend and the Wabash.

PENNSYLVANIA.—Contracts for the construction of two undergrade bridges, one at Woodlawn, N. J., and the other at Woodbury, N. J., have been awarded by this road to the Daniel S. Bader Construction Company, Atlantic City, N. J. Approximately \$55,000 is involved in the first project while the latter is expected to cost about \$45,000. A contract for the completion of approaches to the new passenger station at Lancaster, Pa., at a cost of approximately \$28,000, was awarded to D. S. Warfel, Lancaster, Pa. Two other contracts, one for the construction of a well and pump for the new coal pier at South Philadelphia, Pa. and the other for the installation of

light and power lines in connection with the new Little Creek yard at Norfolk Va., were awarded respectively to the Kidpath & Potter Company, Inc., Philadelphia, Pa., and the Wm. A. Burkard Company, Norfolk, Va.

SOUTHERN PACIFIC.—The Central Pacific has applied to the Interstate Commerce Commission for a certificate for an extension of its Walnut Grove branch in Sacramento county, Calif., from Walnut Grove to Isleton, 8 miles.

SOUTHERN PACIFIC.—Additions and improvements to the terminal facilities at San Jose, Cal., to be constructed within the next two years, will involve an expenditure of about \$3,250,000. This will include the construction of a new line outside of the congested section of the city and a new passenger station. During the remainder of 1928 it is planned to construct an additional 40,000 ft. of track in the new San Jose yard at a cost of \$200,000.

WACO, BEAUMONT, TRINITY & SABINE.—A contract for the construction of extensions from Livingston, Tex., through Bragg, Saratoga, Elizabeth and Beaumont to Port Arthur, and from Weldon, Tex., through Midway, Normangee, Thornton and Mart to Waco has been let to the Foundation Company, New York. This contract covers the complete construction of the lines, including all stations and similar structures. About 205 miles of new lines will be constructed and about 115 miles of existing lines will be reconstructed. It is planned to construct shop facilities in the terminal district extending from Elizabeth to Port Arthur and at the northern end of the line in the Waco district. Present plans call for the construction of the main shops at Trinity, Tex., where the shops are now located.

GROSS REVENUES of \$25,304,821, or \$123,234,478, and expenses of \$20,200,008, or \$98,374,038, were reported by the South African Railways for the year ending March 31, 1928. These figures represent increased revenues of \$1,211,474 (\$5,899,878) and increased expenses of \$762,831 (\$3,714,986) when compared with corresponding figures for the year ending March 31, 1927. Surplus after charges was \$379,814, or \$1,849,693, for the year 1927-28, as against a surplus of \$262,514, or \$1,278,443, for the year 1926-27.

During the year 81,654,870 passengers were carried on all lines, representing an increase of 1,570,621 over the figure for the preceding year. First and third class passengers increased 817,010 and 1,179,440, respectively, while the number of second class passengers carried decreased 425,829. Freight traffic amounted to 21,124,344 tons, in the transportation of which 4,760,097,987 ton-miles were produced.

Among the projected expenditures for the year 1928-29 are \$1,278,631 for new lines, \$2,270,930 for betterments on existing lines, and \$1,624,876 for rolling stock.

At the close of the year motor coaches were in operation over 7,438 route miles, while an additional 2,555 route miles were authorized.

Financial

ATLANTIC COAST LINE.—Acquisition.—This company has applied to the Interstate Commerce Commission for authority to acquire and operate as part of its system the Deep Lake Railroad, which has a line from Deep Lake to Everglades, Fla., 14 miles.

CHICAGO & NORTHWESTERN.—Abandonment.—This company has applied to the Interstate Commerce Commission for authority to abandon its line from Bonita to a point on the Langlade-Oconto county line, Wis., 15½ miles. Permission is sought to abandon 6½ miles of the line immediately and the remainder after September 1, 1930, after the removal of timber adjacent to it.

CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA.—Equipment Trust Certificates.—The Interstate Commerce Commission has authorized this company to assume obligation and liability in respect of \$540,000 of equipment trust of 1917 certificates, to be offered for sale at competitive bidding and sold to the highest bidder.

CONDON, KINZUA & SOUTHERN.—Operation in Interstate Commerce Authorized.—The Interstate Commerce Commission has authorized this company to operate in interstate commerce a line from Condon to Kinzua, Ore., 24 miles, constructed by the Kinzua Pine Mills Company, and to issue \$203,600 of capital stock to the delivered at par to the Mills company in part payment.

COLORADO & SOUTHERN.—Abandonment.—This company has applied to the Interstate Commerce Commission for authority to abandon that part of its Platte Canon line extending from Waterton to Leadville, Colo., with several branches, having a total mileage of 185. The company informed the Commission that construction by the city of Denver of a reservoir in Platte Canon will destroy all through traffic on its Denver-Leadville line. While the company stated that it has no objection to abandonment of the 19-mile, Waterton-Buffalo link, through condemnation of the property, it can consent thereto only on the express condition that it receives from the Commission authority to abandon the remainder of the line with its branches west of Buffalo. Abandonment of the link only, the company stated, would leave the western segment disconnected. As this is the principal source of earnings of the Platte Canon branch the company stated that it could be operated only at a great loss and would be of little service to the public.

DETROIT & MACKINAC.—Abandonment.—This company has applied to the Interstate Commerce Commission for authority to abandon its line from Emerson to Hillman, Mich., 13 miles.

ERIE.—New Director.—Walter P. Chrysler, president and chairman of the

Chrysler Corporation, has been elected a director of this road succeeding George E. Marcy, resigned.

NEW YORK, CHICAGO & ST. LOUIS.—*Notes.*—The Interstate Commerce Commission has authorized this company to issue a promissory note or notes for \$5,000,000, at 6 per cent, and from time to time a similar note or notes in renewal, maturing not later than December 31, 1929, the proceeds to be used as additional working capital, on condition that the notes shall not be made the basis for future capitalization.

READING.—*Operating Contract.*—This company has applied to the Interstate Commerce Commission for authority to acquire control of the Port Reading and to operate it as a part of its system under an operating contract. It already controls the company by stock ownership.

ST. LOUIS SOUTHWESTERN.—*Abandonment.*—The Interstate Commerce Commission has authorized this company and the Pine Bluff Arkansas River to abandon part of a branch line from Reydel to Waldstein, Ark., 6,450 feet.

ST. LOUIS-SAN FRANCISCO.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue \$8,000,000 of consolidated mortgage bonds and to pledge them from time to time as security for short-term notes.

TEXAS & PACIFIC.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to acquire control of the Texas-New Mexico by purchase of \$500,000 of latter's capital stock. The proceeds would be used to provide in part for construction of New Mexico company's line from a connection with T. & P. at Monahans via Wink, Texas, to southern boundary of New Mexico, approximately 38 miles, in accordance with previous order of commission.

Average Price of Stocks and of Bonds

	Last Oct. 2	Last week	Last year
Average price of 20 representative railway stocks.	121.48	122.23	122.68
Average price of 20 representative railway bonds.	93.67	93.65	95.66

Dividends Declared

Atchison, Topeka & Santa Fe.—Common, \$2.50, quarterly, payable December 1 to holders of record October 26.

Baltimore & Ohio.—Common, \$1.50, quarterly; preferred, \$1.00, quarterly, both payable December 1 to holders of record October 20.

Carolina, Churchfield & Ohio.—1 per cent, quarterly; stamped stock, 1¼ per cent, quarterly, both payable October 10 to holders of record September 29.

Delaware, Lackawanna & Western.—\$1.50, quarterly, payable October 20 to holders of record October 6.

New York, Lackawanna & Western.—1¼ per cent, quarterly, payable October 1 to holders of record September 15.

Pittsburgh & West Virginia.—\$1.50, quarterly, payable October 31 to holders of record October 13.

Reading.—Common, \$1.00, quarterly, payable November 8 to holders of record October 10.

United New Jersey Railroad & Canal.—2½ per cent, quarterly, payable October 10 to holders of record September 21 to October 9.

Officers

Executive

L. C. Probert has been appointed vice-president on the Erie, with headquarters at New York. The Industrial Development department has been transferred to his jurisdiction and he will perform such other duties as the president may assign to him.

Benjamin W. Scandrett, who has been appointed vice-president of the Northern Pacific with general jurisdiction over all departments and with headquarters at St. Paul, Minn., has been in the service of that railroad for nearly 12 years. He was born at Fairbault, Minn., on March 3, 1883, and obtained his preparatory education at the Shattuck Military Academy. From 1900 to 1902, Mr. Scandrett attended the University of Minnesota, taking an engineering course, and then entered the Washburn College, School of Law, from which he graduated in 1906. He entered railway service on October 1, 1907, as assistant at-



Benjamin W. Scandrett

torney in Kansas and Missouri for the Union Pacific at Topeka, Kan., where he remained until 1913, when he was promoted to assistant general attorney in Iowa and Nebraska, with headquarters at Omaha, Neb. Mr. Scandrett entered Northern Pacific service on January 1, 1917, as general attorney, being promoted to assistant general solicitor on October 1, 1919, and general solicitor on July 1, 1925. His appointment as vice-president became effective on October 1.

Michael H. Cahill, former vice-president in charge of operations of the Seaboard Air Line, has been elected chairman of the board and a director of the Missouri-Kansas-Texas, succeeding L. F. Loree. Mr. Cahill was born at Lexington, Richland Co., O., on November

19, 1874. He entered railway service in 1891 with the Baltimore & Ohio and served successively to March, 1920, as messenger boy, operator, dispatcher, trainmaster, assistant superintendent, as superintendent on five divisions, and as general superintendent on the Pennsylvania and Maryland districts. This entire service was with the Baltimore & Ohio, except for a short time when he served as superintendent of the Buffalo



Michael H. Cahill

division of the Delaware, Lackawanna & Western. In March, 1920, he was appointed general manager of the Seaboard Air Line, serving in that capacity until June, 1922, when he was promoted to the position of vice-president in charge of operation for the same road. In April, 1928, Mr. Cahill was granted a leave of absence, at his own request.

M. B. McBride, auditor, assistant treasurer and assistant to the president of the Cowlitz, Chehalis & Cascade, with headquarters at Chehalis, Wash., has been appointed vice-president, with headquarters at the same point. Mr. McBride has been engaged in some form of railway service for 41 years. He was born at Portage, Wis., on August 6,



M. B. McBride

1871, and attended Curtiss College, entering railway service as a telegraph operator on the Hastings & Dakota division of the Chicago, Milwaukee, St.

Paul & Pacific at the age of 16 years. Later he acted as agent and yardmaster on that division and in 1889 he became an operator on the Coast district of the Northern Pacific. Mr. McBride served successively with the Northern Pacific as operator, agent, dispatcher, and chief clerk to the superintendent until 1906, except during 1894 and 1895 when he acted as chief clerk to the superintendent and the general superintendent of the Oregon-Washington Railroad & Navigation Company. From 1905 to 1908 he was engaged on the construction of the Milwaukee in Montana and Idaho as auditor and paymaster and he was then appointed chief clerk to the chief engineer at Seattle, Wash. Later Mr. McBride served as auditor of the subsidiary companies of the Milwaukee at Chicago and from 1918 to 1920 he was general auditor of the Pacific Car & Foundry Company, Seattle. Since that time he has been auditor, assistant treasurer and assistant to the president of the Cowlitz, Chehalis & Cascade. Mr. McBride's appointment as vice-president became effective on September 15.

Financial, Legal and Accounting

E. V. Ingels has been appointed assistant controller on the Southern Pacific with headquarters at New York, succeeding **P. B. Stofer**, deceased.

Operating

B. H. Vroman, district superintendent of the Pullman company at Denver, Colo., has been promoted to zone superintendent, with headquarters at Chicago.

H. D. Barber, trainmaster on the Erie at Meadville, Pa., has been promoted to assistant superintendent of the Marion division, with headquarters at Chicago.

R. E. Taylor has been appointed chief train dispatcher on the London division of the Canadian Pacific, with headquarters at London, Ont., succeeding **J. H. Todd**, promoted.

William J. Leahy, trainmaster at Markham yard of the Illinois Central at Chicago, retired under the pension rules of the company on September 30, after 49 years of railway service.

R. C. Morse, general superintendent on the Pennsylvania, with headquarters at New York, has been appointed general superintendent of the New York Zone of the Pennsylvania.

J. A. Clancey, superintendent of transportation of the Grand Trunk Western, with headquarters at Detroit, Mich., has been promoted to general superintendent of transportation, with headquarters at the same point.

R. A. Sewall, transportation assistant on the Canadian Pacific, with headquarters at St. John, N. B., has been ap-

pointed transportation assistant at Montreal, replacing **C. O. McHugh**, transferred.

J. F. Patterson, general manager of the Long Island, with headquarters at New York, has been appointed general manager of the New York Zone of the Pennsylvania, of which the Long Island is a part.

C. A. Calkins, assistant supervisor of safety of the Long Island with headquarters at New York, has been appointed supervisor of safety, with the same headquarters, succeeding **T. P. Brennan**, whose death is noted elsewhere in this issue.

G. D. Hughey, superintendent of the Delaware & Hudson at Plattsburg, N. Y., has been appointed superintendent of transportation, with headquarters at Albany, N. Y., succeeding **J. E. Roberts**, promoted. **H. A. Empie**, general fuel agent, with headquarters at Albany, has been appointed superintendent of the Champlain division.

Effective October 1, the New Jersey General division of the Pennsylvania (exclusive of the Atlantic and Camden Terminal divisions and the Philadelphia and Camden Ferry Company) will be assigned to the "New York Zone." The Atlantic and Camden Terminal divisions, and the Philadelphia and Camden Ferry Company, are placed under the jurisdiction of the general superintendent of the Philadelphia Terminal division.

Theodore Finkbohner, chief clerk to the superintendent of the San Joaquin division of the Southern Pacific at Bakersfield, Cal., has been promoted to assistant trainmaster of the same division in charge of fruit movements from the San Joaquin valley, with headquarters at Exeter, Cal. **Louis Kocher**, district supervisor of transportation in the Southern district at Los Angeles, Cal., has been promoted to assistant trainmaster of the Coast division, with headquarters at San Francisco, Cal.

H. A. Israel, master of trains and track of the Illinois division of the Missouri Pacific, has been promoted to assistant superintendent of that division, with headquarters at Bush, Ill., and his former position has been abolished. **W. H. Bailey** has been appointed acting trainmaster of the Eastern division, with headquarters at Jefferson City, Mo., succeeding **R. E. Allen**, who has been appointed acting trainmaster of the St. Louis district of the same division, with headquarters as before at Jefferson City. Mr. Allen replaces **C. W. Exline**, who has been granted a leave of absence on account of sickness. The jurisdiction of **E. E. Harn**, assistant trainmaster on the Illinois division, with headquarters at Bush, has been extended over all districts on that division. The jurisdiction of **G. W. Raney**, trainmaster on the Illinois division, with headquarters at Bush, has been extended to include

the Chester, Cairo, Mt. Vernon and East and West districts of that division.

A. L. Kline, superintendent on the Erie at Buffalo, N. Y., has been appointed superintendent of the New York division and Side Lines, with headquarters at Jersey City, N. J., succeeding **A. C. Elston**, resigned. **W. J. English**, superintendent at Hornell, N. Y., has been transferred to the Buffalo and Rochester divisions, replacing Mr. Kline. **H. J. Bordwell**, superintendent at Susquehanna, Pa., will succeed Mr. English as superintendent of the Susquehanna and Tioga divisions. **G. M. Murray**, assistant superintendent of terminals, with headquarters at Jersey City, N. J., will succeed Mr. Bordwell as superintendent of the Delaware and Jefferson divisions. **R. C. Randall**, assistant division superintendent, with headquarters at Chicago, will succeed Mr. Murray as assistant superintendent of terminals.

Traffic

Clarence R. Dunn has been appointed freight service agent for the Central of Georgia, with headquarters at Montgomery, Ala.

C. E. Ward has been appointed industrial commissioner on the Erie, with headquarters at New York. He will have charge of industrial development.

George W. Martin, general agent in the freight department of the Chicago, Rock Island & Pacific at Denver, Colo., who was granted a leave of absence in June, 1928, retired from active railway work on October 1, after 22 years of service with that company.

Robert A. Wogan, commercial agent of the Chicago & Eastern Illinois at Boston, Mass., has been promoted to general agent at the same point, succeeding **William L. Robinson**, who has been transferred to New York. Mr. Robinson succeeds **G. C. Whitney**, who resigned on October 1 to accept service with another company.

William L. Donaldson, who has been appointed assistant western traffic manager of the Lehigh Valley, with headquarters at Chicago, Ill., was born on December 4, 1881, at Detroit, Mich. He attended grammar school, high school and the classes of Detroit Business University at Detroit and entered railway service as a clerk-stenographer for the Grand Trunk at Detroit, serving in this position for three years. He was subsequently employed in the superintendent's office on the Wabash and the office of the general agent of the Chicago & North Western in the same capacity. In April, 1903, he became soliciting freight agent at Detroit for the Michigan Central-Lehigh Valley route. Three years later he was transferred to Sayre, Pa., in a similar capacity on the Lehigh Valley. From March, 1907, to September, 1908, he was stationed at Auburn,

N. Y. He was then promoted to general traveling agent of the Lake Shore-Lehigh Valley-Michigan Central route, with headquarters at Buffalo, N. Y. From August 1909, to May, 1911, he served as agent for the Lake Shore-Lehigh Valley route at Chicago, and at the latter time he was appointed soliciting freight agent and westbound agent on the Lehigh Valley, with the same headquarters. He served in this capacity until March, 1915, when he became



William L. Donaldson

chief clerk to the general freight agent at New York. In January, 1916, he was promoted to assistant general freight traffic agent at Buffalo, serving in that capacity until May, 1922 when he became general freight traffic agent with headquarters at New York, in which capacity he served until his recent appointment.

Charles E. Rolfe, assistant general traffic manager on the Delaware & Hudson, with headquarters at Albany, N. Y., has been appointed general traffic manager, with the same headquarters. Mr. Rolfe was born in Nashua, N. H.,



Charles E. Rolfe

and was educated in the public schools and at Gorham Academy, Gorham, Me. He entered railway service on January 21, 1877, as a station agent on the Portland & Rochester, now a part of the Boston & Maine, and in 1884 he was ap-

pointed traveling freight agent on the Fitchburg, now also a part of the Boston & Maine, which position he held until 1892, when he was promoted to division freight agent of the same road. In 1896 Mr. Rolfe was appointed general eastern freight agent of the Delaware & Hudson and in 1903 he was appointed assistant general freight agent. He was promoted to the position of general freight agent in 1905 and subsequently served as general eastern freight agent and assistant general freight agent, with headquarters at Albany. He was appointed assistant general traffic manager of the same road in January, 1924, which position he held at the time of his recent appointment.

John Erle Roberts, superintendent of transportation on the Delaware & Hudson, with headquarters at Albany, N. Y., has been appointed assistant general traffic manager, with the same headquarters. Mr. Roberts was born at Bainbridge, N. Y., on September 23, 1879 and was educated at Bainbridge Academy, Bainbridge, N. Y., and Williston Academy, East Hampton, Mass. He entered the service of the Delaware & Hudson in 1892 and served consecutively to 1911 as helper, clerk, chief clerk, special agent, assistant yardmaster, transportation clerk in the office of the superintendent of transportation at Albany, and chief clerk to the general superintendent of transportation. In 1912 he was appointed general superintendent of the Greenwich & Johnsonville Railway, with headquarters at Greenwich, N. Y., serving in that capacity until July, 1914, when he was appointed superintendent of car service for the Delaware & Hudson at Albany. On September 1, 1920, he was promoted to the position of superintendent of transportation and served in that position until his recent appointment as assistant general traffic manager. Mr. Roberts has been actively associated with the American Railway Association, having served ten years as chairman of the Committee on Car Service. He also served as chairman of the A. R. A. Joint Committee representing the Transportation, Mechanical and Car Service divisions, appointed to consider the Railroad Security Owners' car pooling plan, and of the American Railway Association Conference Committee with U. S. Coal Commission at Washington, D. C. He is also a member of the Car Hire Investigation, Defense Committee.

Engineering, Maintenance of Way and Signaling

R. R. Nace, division superintendent of the Pennsylvania at Indianapolis, Ind., has been appointed chief engineer maintenance of way of the New York Zone of the Pennsylvania.

R. I. Becksted has been appointed signal supervisor of the Quebec district

of the Canadian Pacific, with headquarters at Montreal, Que., replacing D. M. Noell, transferred.

A. C. Watson, chief engineer on the Long Island, with headquarters at Jamaica, N. Y., has been appointed chief engineer of the New York Zone of the Pennsylvania, of which the Long Island is a part.

J. G. Wise has been appointed assistant terminal engineer on the New York Central, with headquarters at New York. **E. E. Dietch** has been appointed assistant engineer, Eastern district, with headquarters at New York. **J. M. Connolly** has been appointed assistant engineer, Middle district, with headquarters at Albany, N. Y., and **R. H. Kugler** has been appointed assistant engineer on the Western district, with headquarters at Buffalo, N. Y.

Mechanical

W. Y. Cherry, superintendent of motive power on the Long Island, has been appointed general superintendent of motive power of the New York Zone of the Pennsylvania of which the Long Island is a part.

Obituary

Charles A. Young, formerly a member of the National Trans-Continental Railway Commission of Canada, died at Winnipeg, Man., on September 28. Mr. Young served as a commissioner of the Trans-Continental (now a part of the Grand Trunk Pacific, which is operated as a part of the Canadian National), with headquarters at Ottawa, Ont., from 1906 to 1912.

T. P. Brennan, supervisor of safety of the Long Island, with headquarters at New York, died at his home at Patchogue, L. I., on September 13, after an illness which had been troubling him for about two years. Mr. Brennan, who has been in the service of the Long Island for about 35 years, was appointed supervisor of safety in 1918. He is succeeded by C. A. Calkins, who heretofore has acted as assistant supervisor of safety.

A. Gardner Palmer, formerly general freight and passenger agent of the Peoria, Decatur & Evansville (now part of the Illinois Central) and the Jonesboro, Lake City & Eastern (now part of the St. Louis-San Francisco), died at San Jose, Cal., on August 15 at the age of 72 years. Mr. Palmer entered railway service in 1878 as a night operator on the Chicago & Eastern Illinois. He served with the P., D. & E. from 1887 to 1893 and from 1894 to 1900. From 1900 to 1902 he was general traffic and sales agent of the Sloss-Sheffield Steel & Iron Company, Birmingham, Ala., and was connected with the J., L. C. & E. from 1905 to 1908.

